

The Far Eastern Review

ENGINEERING + FINANCE + COMMERCE

A Monthly Review of Far Eastern Trade, Finance and Engineering, Dedicated to the Industrial Development and Advancement of Trade in Far Eastern Countries.

PUBLISHED AT 5 JINKEE ROAD - - - - SHANGHAI, CHINA.
George Bronson Rea, *Publisher.* W. H. Donald, *Editor.*

HEAD OFFICE.—5 Jinkee Road, Shanghai; Telegraphic Address: Farview. PEKING OFFICE.—23 Tsung-pu Hutung East.
JAPAN OFFICE.—Care of Messrs. Sale and Frazar, Tokyo. MANILA.—Fleming, Percy Smith and Seth, Roxas Building,
Room 217-218, Escolta, Binondo, P. O. Box 214.
REPRESENTATIVES IN THE UNITED STATES.—J. Roland Kay Co., Conway Building, Chicago; 18 East 41st Street, New York.
REPRESENTATIVES IN GREAT BRITAIN AND CONTINENT. - Sole Advertising Agents: Walter Judd, Ltd., 97 Gresham Street,
Bank, London, E.C.

In China, \$9 Mex. per year, 80 cents Mex. per copy. In all other countries in the Postal Union, \$8 Mex. per year plus \$2 Mex. per year for postage.

VOL. XVI - JANUARY, 1920 - NO. 1

CONTENTS:

	PAGE		PAGE
BRIDGE OVER THE TAITONG KANG, KOREA	Cover	Railway System with Shanghai as Terminal ...	43
<i>This bridge is 1,436 feet long and consists of six spans of 200 feet each and three of 60 feet. It took about two years to construct.</i>		Independent American Loan to China ...	44
Proposed Railway Routes into Szechuan* ...	1	Modern Telephone and Electrical Factory in China* ...	45
Democratic Dollar Diplomacy ...	12	American Standard Ships Building in Shanghai* ...	46
Pearl Harbor to be a First Class Base* ...	13	Big Central Station for Peking ...	47
New Concrete Post Office Building at Nanking* ...	14	Industry at High Pressure in Shanghai ...	47
Big Port Project for North China* ...	15	The Inwardness of the New Consortium ...	48
Chinese Post Office at Hankow* ...	17	Electric Lamp Making in Shanghai* ...	50
Chihli's First Industrial Exposition* ...	18	Shanghai Tramways in 1919 ...	51
A Return to Pure Americanism ...	20	The Grand Canal* ...	52
Native Labor in Shanghai ...	20	Chinese-American Bank Inaugurated ...	53
Japan's Metropolitan Electric Railways* ...	21	Jardine, Matheson's New Office Building* ...	54
Education in Netherlands India ...	29	Handley-Page Work in China* ...	55
Statistics of Japanese Railways for 1918 ...	30	China's Great North-west ...	56
The Railways of China* ...	31	Sino-British Enterprise for North Shansi... ..	33
Railway Progress in China in 1919* ...	34	S.S. "Henrik" Launched at Shanghai ...	59
Peking-Urga Railway Project Revived* ...	42	Radical Amendment of British-China Co. Law ...	51
Scheme of Motor Highways, Canal and River Dredging for Shantung Province ...	41	Shanghai Electric Construction Company* ...	60
		Electric Welding in Shanghai* ...	61
		Sewage System for Shanghai ...	61
ENGINEERING, FINANCIAL, INDUSTRIAL AND COMMERCIAL NEWS ...			62

**Illustrated with Maps or Photographs.*

*Entered at the U.S. Postal Agency, Shanghai, China, as second-class matter. Registered at the Chinese Post Office as a Newspaper.
Entered at the Japanese Post Office as a Newspaper.*

THE PHILIPPINES

Historical.

Early Philippine history fades away into the history of Chinese foreign adventure and commerce, trading having been carried on between the two countries for a thousand years prior to the Spanish conquest.

Magallanes discovered the Philippines in 1521, about 100 years before the Pilgrim Fathers landed at Plymouth Rock. Spaniards settled Cebu, 1568. Legaspi occupied Manila, 1570. British captured Manila, 1762.

United States occupied Manila August 13, 1898. Treaty of Paris signed December 10, 1898. Filipino insurrection began February 4, 1899. First provincial government organized (Pampanga), February 6, 1901. First American Civil Governor, William H. Taft, July 1, 1901. Philippine Act passed July 1, 1902. Jones Act passed August 29, 1916.

Geography.

The Philippine Archipelago extends from the Batanes Islands in the north to the Tawitawi group at the southern end of the Sulu islands, a distance of 1,152 miles. The archipelago is composed of 3,141 islands, of which 400 are inhabited.

Area of Archipelago.

	Square miles.
Total area, land and water	832,968
Land	127,825
Water	705,115

Comparative Areas.

	Square miles.
Philippines	127,853
British Isles	120,973
New York, New Jersey, Pennsylvania, and Delaware	104,970
Japan	147,649

Luzon islands is as large as Denmark, Belgium, and Holland combined. Mindanao is about equal in area to Portugal.

Distribution of Area.

	Square miles.
Forest land	72,000
Commercial forest	61,000
Cultivated	14,000
Grass lands	20,000
Unexplored	14,000

Forest lands contain some 747 native tree species; 50 to the acre in some parts. Mindanao has 423 varieties. Over 200 varieties come to the

Manila market. One-half of the forest land is virgin.

Cultivated Land.

	Acres.
Rice	3,000,000
Hemp	1,236,000
Coconuts	680,000
Corn	1,070,000
Tobacco	145,000
Sugar	445,000
Magney	76,000
Cacao	2,600
Coffee	2,000

Comparative Cultivation.

Japan and the Philippines: Japan with 14,000,000 acres of arable land produces crops to the value of Ps.2,000,000,000. Philippines with 7,000,000 acres produces only Ps. 200,000,000.

Population.

Total from latest (1917-18) Philippine Health Service records: 9,500,000.

Christians	8,730,000
Mohammedans	275,000
Non-Christians and Pagans	595,000

Japanese	42,800,000
----------	------------

Progress of Population.

1735	837,182
1805	1,741,234
1826	2,593,287
1840	3,096,031
1862	4,734,533
1887	5,984,727
1896	6,261,339
1917-18	9,500,000

Climate.

Average temperature for 30 years: 80° Fahrenheit.

Dry temperate months: November, December, January, and February.

Intermediate months: March, July, August, September, October.

Hot months: May and June.

Rainfall.

Maximum days of rain in July, August, September.

Minimum days of rain in February and March.

Dry season: November to May, inclusive.

Wet season: June to October, inclusive.

Typhoons: Frequent in July, August, September, and October.

Mountains.

	Feet
Apo	10,312
Pulog	9,450
Mayon	8,970
Halcon	8,865
Malindang	8,197
Canlaon	8,192
Ste. Tomas	7,418
Data	7,364
Banajao	7,382
Pagsan	7,339
Isarog	6,450
Pinalobo	6,137
Cristobal	5,288
Bulusan	5,100
Maquiling	4,783
Arayat	3,564
Talim	1,519
Taal	1,050

There are 50 volcanoes in the archipelago, of which 20 are active and 30 are extinct.

The principal active volcanoes are Taal, Canlaon, and Apo.

The principal extinct volcanoes are Talim, Maquiling, Cristobal, Banajao, and Isarog.

Rivers.

	Miles
Grande de Pampanga	220
Pulangi, Mindanao	300

Other rivers of importance are the Agno Grande, Grande de Pampanga, Agusan, and Pasig.

Mindoro has 60 rivers and Samar 26, none of them of commercial value.

Real Estate Values.

[1 peso = \$0.50].

Manila	Ps.104,024,000
Provinces	392,180,000

Mortality (Americans and Europeans) per 1,000 (1917-18).

Manila	8.0
New York	16.5
San Francisco	15.0
Chicago	14.0
Glasgow	18.0
Belfast	22.0

ALPHABETICAL LIST OF ADVERTISERS

Allen & Co., Ltd., Edgar	2	Dollar Co., Robert	79	Lidgerwood Manufacturing Co.	75	Saco-Lowell Shops	Cover
American Blower Co.	79	Drysdale & Co., Ltd.	45	London Directory Co., Ltd.	85	Sandycroft, Ltd.	45
American Iron Products Co., Inc.	63	Ebbw Vale Steel, Iron & Coal Co., Ltd.	67	London & Lancashire Trading Co.	31	Shanghai Dock & Eng. Co., Ltd.	29
American Rolling Mill Co.	71	Electricity Department, S.M.C.	77	Lynd-Farquhar Co.	67	Shanghai Municipal Council	77
American Trading Co.	Back Cover	English Electric Co., Ltd.	25	Ma-nda Trading Co.	94	Shanghai-Nanking Railway	15
American Tool Works Co.	1	Escher Wyss & Cie., S. A.	33	Mather and Platt, Ltd.	91	Shantung Railway	73
Andersen & Co., A. O.	84	Evans & Sons (Wolverhampton), Ltd.	44	McClintie-Marshall Products Co.	45	Shewan, Tomes & Co.	54
Andersen, Meyer & Co., Ltd.	23	Joseph	44	McConway and Torley Co.	87	Siebe Gorman & Co., Ltd.	42
Arnhold Brothers & Co., Ltd.	35	Fairbanks Co.	85	Mitsubishi Goshi Kaisha	48	Sino-North American Co., Ltd.	47
Asia Banking Corporation	8	Fairbanks, Morse & Co.	81	Mitsubishi Zosen Kaisha, Ltd.	72	South Manchuria Railway Co.	12
Athens Steel Co.	75	Forey, Hartley	33	Mitsui & Co., Ltd.	34	Standard Oil Co. of New York	98
Attwater & Sons	39	Formosan Railway	89	Mustard & Co.	78	Standard Underground Cable Co.	50
Austin Company, Inc., F. C.	89	Freeman Manufacturing Co.	83	Negretti & Zambra	33	Stewart, Ltd., J. & A.	91
Babeock & Wilcox, Ltd.	80	Fu Chung Corporation	66	Nesbitt, Ltd., A. & W.	30	Stewarts & Lloyds, Ltd.	42
Baldwin Locomotive Works	27	Furukawa & Co., Ltd.	88	New Engineering & Shipbuilding Works	82	Sullivan Machinery Co.	70
Bank of Communications	6	Gaston, Williams & Wigmore	10	Niles-Bement-Pond Co.	77	Sumitomo	69
Bank of East Asia	9	Grace & Co., W. R.	72	Nippon Electric Co., Ltd.	58	Thornycroft & Co., John I.	1
Bank of the Philippine Islands	Cover	Grant, Robert	47	Nippon Menkwa Kabushiki Kaisha	50	Tokyo Electric Co.	50
Banque de l'Indo-Chine	4	Green Island Cement Co., Ltd., The	60	Nippon Yusen Kaisha	28	Truscon Steel Co.	89
Banque Industrielle de Chine	5	Greene Tweed & Co.	55	Nobel's—Glasgow	36	Trimont Manufacturing Co.	65
Barr, Ltd., James C.	79	Han-Yeh-Ping Iron & Coal Co., Ltd., The	64	North-China Daily News	75.90	Turner & Halsey Co.	83
Bank of Taiwan, Ltd.	4	Hasler Telegraph Works	95	North China Union Language School, Peking	45	United Metals Selling Co.	37
Briggs & Sons, Ltd., W.	81	Haywards, Ltd.	75	Osaka Shosen Kaisha	86	United States Rubber Co.	53
British-American Tobacco Co. (China), Ltd.	46	Heap & Co., Ltd., Joshua	43	Pacific Mail S. S. Co.	28	United States Steel Products Co.	16.17.76.78
Brown, Junr., David	63	Holliday & Co., Ltd., L. B.	30	Park-Union Foreign Banking Corp.	9	Union Insurance Society of Canton, Ltd.	97
Brown Shoe Co.	26	Hongkong & Shanghai Banking Corporation	5	Pease Co., C. F.	85	Vickers (Leeds) Eng. Co., Ltd., B. R.	83
Bucyrus Company	84	Hongkong & Whampoa Dock Co., Ltd.	96	Pekin Syndicate, Ltd.	44	Wah Chang Mining & Smelting Co.	74
Butterfield & Swire	56	Imperial Japanese Government Railways	18.19	Pittsburgh Steel Co.	75	Walker & Sons, Ltd., Wm.	78
Canton-Kowloon Railway	22	International Banking Corporation	3	Pittsburgh Testing Laboratory	93	Watts, Inc., Frank E.	55
Canada Carbide Co.	75	International General Electric Co., Inc.	57	"Ports of the Orient" issue	95	Whittall & Co., Ltd., J.	2
Champion Spark Plug Co.	51	Irving National Bank	41	Pratt & Co., Ltd., F.	42	Willys Overland Co., Inc.	62
Chartered Bank of India, Australia & China	40	Jacobs Manufacturing Co.	49	Raleigh Cycle Co., Ltd.	32	Wisconsin Electric Co.	51
Chicago Bridge & Iron Works	84	Jardine, Matheson & Co., Ltd.	52	Remington Arms UMC Co., Inc.	38	Worthington Pump Co., Ltd.	40
China Electric Co., Ltd.	59	Jones & Lamson Machine Company	43	Rendrock Powder Co.	63	Yokohama Seiko Kaisha	80
Chinese-American Co.	39	Johnson Pickett Rope Co.	94	Roe & Co., A. V.	81	Yokohama Specie Bank, Ltd.	7
Chinese Government Railways	11.13.14.15.20.21.22.24	Johnson & Son, S. C.	68	Royal Bank of Canada	9	Yarrow & Co., Ltd.	Cover
Columbia Batteries	30	Kawasaki Dockyard	70	Russo-Asiatic Bank	5	Young & Marten, Ltd.	24
Coventry Chain Co.	Cover	Kiangnan Dock & Engineering Works	31	Ruston & Hornsby Ltd.	30		
		Kuhara Mining Co.	92	Ryerson & Son, Joseph T.	61		

Because of the increased cost of paper and printing, and the demands made upon advertising space by the Classified Advertisers' Directory, this feature will be omitted until normal conditions return.

JANUARY, 1920

THE

VOL. XVI. No. 1

FAR EASTERN REVIEW

ENGINEERING FINANCE COMMERCE

Partial List of Contents

Comparison of Railway Routes into Szechuan

A Big Port Project for North China

The Railways of China and their Progress

The Inwardness of the New Consortium

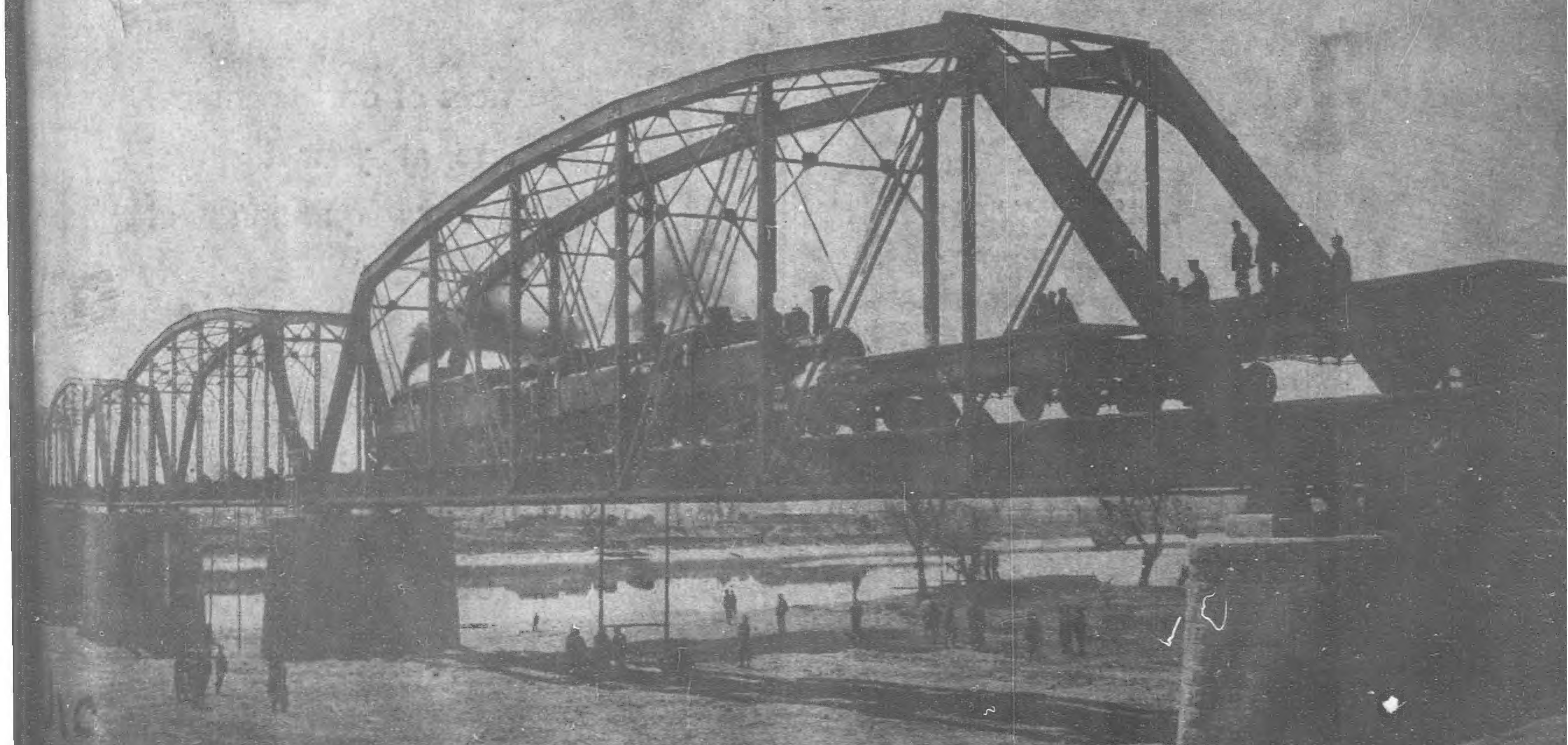
China's Great North-West—II.

YALE UNIVERSITY

FEB 19 1920

LIBRARY

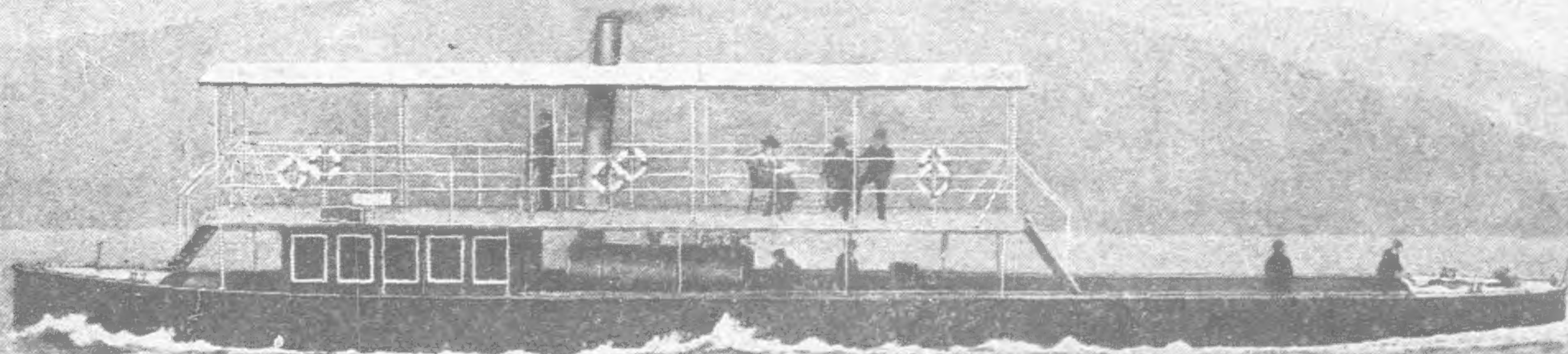
遠東時報



Steel Bridge over the Taikang River, Korea

SHALLOW DRAUGHT LAUNCH—YARROW SYSTEM,
built by
YARROW & CO., L^{TD}, Glasgow,
(formerly of Poplar, London).

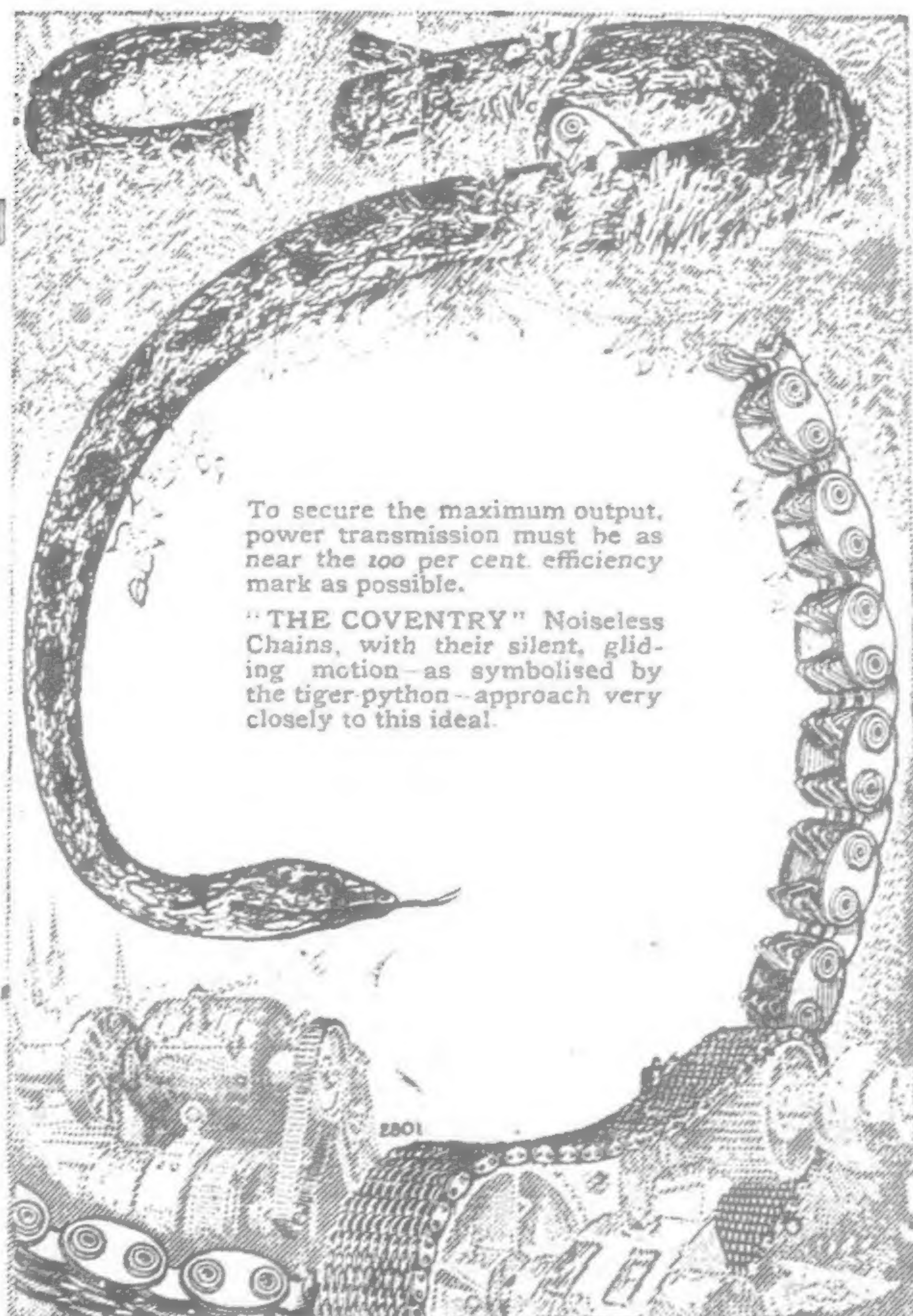
Yarrows, Limited, of Victoria, British Columbia, Shipbuilders, Ship Repairers and Engineers,
 are associated with Yarrow & Co., Ltd., Glasgow.



Length 75 ft., beam 9 ft. 3 in., draught 12 in., speed 10 miles an hour.

Vessel as above illustrated can be shipped whole to any part of the world.

Messrs. YARROW construct fast Passenger and Commercial Vessels, Shallow Draught Steamers, Tugs, &c., propelled by Sternwheels, Side Wheels, or Screws working in Tunnels fitted with Yarrow's Patent Hinged Flap.



To secure the maximum output, power transmission must be as near the 100 per cent. efficiency mark as possible.

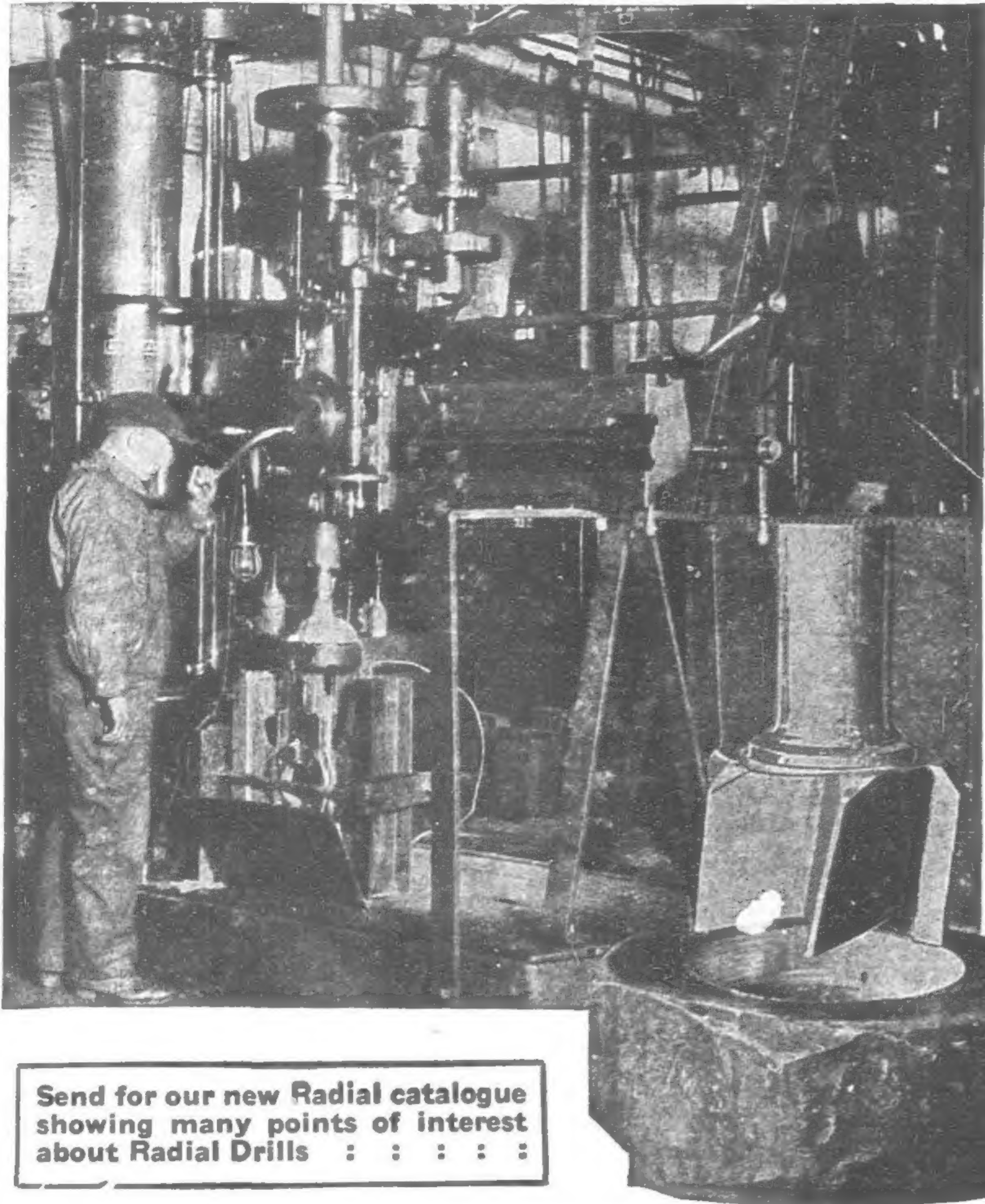
"THE COVENTRY" Noiseless Chains, with their silent, gliding motion—as symbolised by the tiger-python—approach very closely to this ideal.

THE services of our Technical Staff are at your disposal upon any question of Transmission.

* * *

"THE COVENTRY" CHAIN CO., LTD.
COVENTRY :: :: ENGLAND

Cables : CHAINS COVENTRY
 Codes : A.B.C. 4th & 5th Editions
 Western Union & Marconi



Send for our new Radial catalogue
showing many points of interest
about Radial Drills : : : :

AMERICAN

7½ HOURS SAVED ON THIS JOB

Here is a 6 ft. "American" Radial in one of the shops of the largest railroad system in this country.

The illustration shows it drilling cross heads. A hole $5\frac{4}{8}$ in. in diameter and 9 in. deep is bored in 1½ hours in very tough steel.

Many of the railroad shops where the severest work is done use "American" Radials almost exclusively

THE AMERICAN TOOL WORKS COMPANY
CINCINNATI, U. S. A.

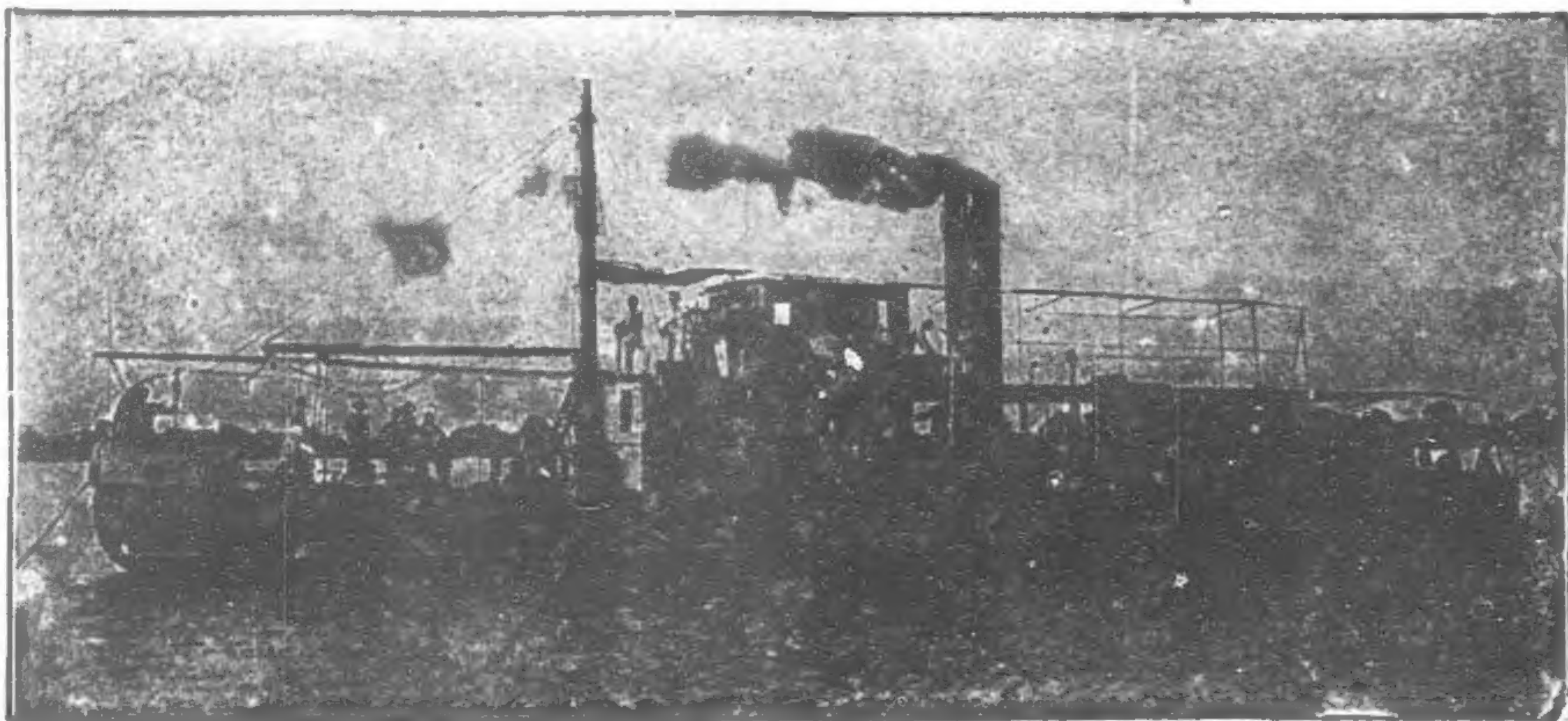
LATHES - PLANERS

SHAPERS - RADIALS

THORNYCROFT

SHIPBUILDERS & ENGINEERS

BUILDERS OF **WAR VESSELS:** DESTROYERS, SUBMARINES, CRUISERS,
MINELAYERS, CUSTOM PATROL BOATS, etc.
CARGO AND PASSENGER BOATS: Up to 3,500 tons.



Shallow Draught River Steamer Shu-Tung—Yangtse River

Write for copies of our various Catalogues dealing with above,

JOHN I. THORNYCROFT & CO., LIMITED,
CAXTON HOUSE,
WESTMINSTER, LONDON, S.W., ENGLAND.

Shipbuilding Yard: WOOLSTON, SOUTHAMPTON, ENGLAND.



SHALLOW DRAUGHT RIVER CRAFT

STEAM OR MOTOR PROPELLED,
STERN WHEEL OR TUNNEL STERN.

MARINE MOTORS

(KEROSENE OR PETROL)
FROM 15 B.H.P. TO 180 B.H.P.

ALL TYPES OF MOTOR BOATS
FOR SEA OR RIVER SERVICE.

STATIONARY AND INDUSTRIAL OIL ENGINES

FOR ELECTRIC LIGHTING, PUMPING,
MINE DRILLING PLANTS, etc.

Agencies:—

SHANGHAI: Shanghai Dock & Engineering Co., Ltd.

HONGKONG: Taikoo Dockyard & Engineering Co., of Hongkong, Ltd.

For particulars regarding Agencies and business generally apply to:—

R. R. ROXBURGH, John I. Thornycroft & Co.,

65 SZECHUEN ROAD, SHANGHAI

Steel—the Edgar Allen Service

If you have a difficult problem, let our Research Laboratory and technical staff assist you. Advice free and confidential. Some of the following literature will also probably be useful to you.

Edgar Allen's

CATALOGUE "G." "Stag Special" High Speed Steel, Best Carbon Tool Steel, Steel Castings, Files, Circular Saws, High Speed Twist Drills, etc.

CATALOGUE "A." "Stag" Ore Crushers and Stone-breakers, Tube and Ball Mills, Separators, Conveyors, etc.

CATALOGUE "B." "Imperial" Manganese Steel Bars, Castings, Forgings, etc.

CATALOGUE "C." Colliery Plant, Screens, Tipplers, etc.

CATALOGUE "D." Motor Car and Aircraft Steels.

CATALOGUE "E." Cement Making Machinery, Rotary Kilns, Rotary Dryers, etc.

CATALOGUE "F." Railway Special Points and Crossings in "Imperial" Manganese Steel, Patent-Rolled "Imperial" Manganese Steel Rails, etc.

CATALOGUE "H." Tramway Special Trackwork.

Write for Catalogue which interests you.

JAPAN OFFICE:
2. MITSU BISHI BUILDINGS,
1 YAESU-CHO,
KOJIMACHI KU,
TOKYO.

Edgar Allen & Co. Limited



AGENTS FOR CHINA:
JARDINE, MATHESON & CO., LTD.
ENGINEERING DEPT.
8A YUEN-MING-YUEN ROAD,
SHANGHAI
AND AT HONGKONG, HANKOW,
TIENTSIN, PEKING, ETC.

Engines & Boilers

FOR ALL PURPOSES

Ransomes, Sims & Jefferies, Ltd.

IPSWICH, ENGLAND

PORTABLE AND TRACTION STEAM ENGINES, STATIONARY ENGINES, VERTICAL ENGINES,
BOILERS OF ALL KINDS, OIL TRACTORS, OIL ENGINES, ELECTRIC ENGINES,
MINING MACHINERY.

AGRICULTURAL MACHINERY

STOCKS KEPT IN TIENTSIN

AGENTS:

J. WHITTALL & CO., LTD.

SHANGHAI TIENTSIN PEKING

TEL. ADDRESS: "WHITTALL" TIENTSIN
14, 16 & 18 VICTORIA TERRACE,
TIENTSIN

B. P. O. Box 64
SHANGHAI

TEL. ADDRESS: "WHITTALL" PEKING
32 TA JUAN FU HUTUNG,
PEKING

International Banking Corporation

OWNED BY THE NATIONAL CITY BANK OF NEW YORK

CAPITAL AND SURPLUS	...	...	...	...	U.S. \$8,500,000
UNDIVIDED PROFITS	...	...	...	...	U.S. \$1,054,000

HEAD OFFICE: NATIONAL CITY BANK BUILDING
55 WALL STREET, NEW YORK

LONDON OFFICE: 36 BISHOPSGATE, E.C.

LYONS OFFICE: 27 PLACE TOLOZAN

SAN FRANCISCO OFFICE: 232 MONTGOMERY STREET

BRANCHES:

CHINA

SHANGHAI
PEKING
TIENTSIN
TSINGTAU
HANKOW
HONGKONG
CANTON

INDIA

BOMBAY
CALCUTTA
RANGOON

PHILIPPINES

MANILA
CEBU

DOMINICAN REPUBLIC

SANTO DOMINGO
SAN PEDRO DE MACORIS
SANCHEZ
SANTIAGO
PUERTO PLATA

JAPAN

YOKOHAMA
KOBE

STRAITS SETTLEMENTS

SINGAPORE

MANCHURIA

HARBIN

JAVA

BATAVIA
SOERABAYA

PANAMA

PANAMA
COLON

BRANCHES OF THE NATIONAL CITY BANK OF NEW YORK

ARGENTINA

BUENOS AIRES
ONCE (BUENOS AIRES)
ROSARIO

CHILE

SANTIAGO
VALPARAISO

ITALY

GENOA

COLOMBIA

MEDELLIN

URUGUAY

MONTEVIDEO

PORTO RICO

SAN JUAN

RUSSIA

MOSCOW
PETROGRAD

BRAZIL

BAHIA
PERNAMBUCO
PORTO ALEGRE
RIO DE JANEIRO
SANTOS
SAO PAULO

VENEZUELA

CARACAS
MARACAIBO

SPAIN

MADRID

SIBERIA

VLADIVOSTOCK

BRANCHES IN
HAVANA AND
21 OF THE
PRINCIPAL CITIES
OF CUBA

TRINIDAD

PORT OF SPAIN

Commercial and Travellers' Letters of Credit, Bills of Exchange and Cable Transfers bought and sold. Current accounts opened and Fixed Deposits in local and foreign currencies taken at rates that may be ascertained on application to the Bank.

H. C. GULLAND, *Manager.*

1A KIUKIANG ROAD.

BANQUE DE L'INDO-CHINE.

[illegible]

Succursales et Agencies:

Bangkok	Haiphong	Mongtze	Pnom-Penh	Singapore
Battambang	Hankèou	Noumèe	Pondichery	Tientsin
Canton	Hanoi	Papecte	Saigon	Tourane
Djibouti	Hongkong	Peking	Shanghai	

Bankers:

IN FRANCE: Comptoir National d'Escompte de Paris, Credit Lyonnais; Banque de Paris et des Pays-Bas;
Crédit Industriel et Commercial Société Général.

IN LONDON: The Union of London and Smith's Bank, Ltd.; Comptoir National d'Escompte de Paris;
Crédit Lyonnais.

The Shanghai Agency undertakes all banking operations and exchange business; grants credits on goods and approved securities and receives deposits on current and fixed deposits according to arrangement.

L. ARDAIN, *Manager.*



THE BANK OF TAIWAN, LTD.

Incorporated by Special Imperial Charter, 1899.

[illegible]

President: TETSUTARO SAKURAI, Esq.

Vice-President: KOJURO NAKAGAWA, Esq.

Directors:

IYETOSHI SADA, Esq.

KYOROKU YAMANARI, Esq.

SHINGO MINAMI, Esq.

Head Office: TAIPEH, FORMOSA (TAIWAN)

Branches: { **JAPAN:** Tokyo (General Manager's Office), Kobe, Osaka, Yokohama.
TAIWAN: Keelung, Tainan, Takow, and 10 other points.
CHINA: Amoy, Canton, Foochow, Hankow, Kiukiang, Shanghai, Swatow.
OTHERS: Batavia, Bombay, Hongkong, London, New York, Semarang, Singapore, Soerabaya.

AGENTS AND CORRESPONDENTS: In the Principal Cities and Towns throughout the World.

London Bankers:

London County Westminster and Parr's Bank, Ltd.

Capital & Counties Bank, Ltd.

London Provincial and South Western Bank, Ltd.

Tokyo Branch : No. 1 Eiraku-cho Ni-chome, Kojimachi-ku.

Telegraphic Address: "TAIWANGINK." Phone Nos. 5060, 5061, 5062, 5063, 5064, 5065, & 5066, Honkyoku.

Interest allowed on Fixed Deposits and Current Accounts on terms which may be ascertained on application. Most favourable terms are granted for Petty Current Accounts. Every description of Exchange and General Banking business transacted.

Special facilities for exchange business on China, Straits Settlements, East Indies, Australia, Great Britain, Russia, America, Canada, South Africa, etc.

K. YAMANARI, General Manager.

Hongkong and Shanghai Banking Corporation

Paid-up Capital	...	...	...	...	...	\$15,000,000
Reserve Funds:	Sterling, £1,500,000 @ 2/- =	\$15,000,000				
	Silver	...	...	...	21,000,000	
						\$36,000,000
Reserve liability of Proprietors	...	...	...	...		\$15,000,000

Court of Directors:

J. A. PLUMMER, Esq.
Chairman
Hon. Mr. E. V. D. PARR,
Deputy Chairman
J. W. C. BONNAR, Esq.
A. H. COMPTON, Esq.
Hon. Mr. S. H. DODWELL
C. S. GUBBAY, Esq.
P. H. HOLYOAK, Esq.
Hon. Mr. J. JOHNSTONE
W. L. PATTENDEN, Esq.
ROSS THOMSON, Esq.

Head Office: HONGKONG

Chief Manager:
HONGKONG . . . N. J. STABB

London Bankers:
LONDON COUNTY WESTMINSTER AND PARR'S
BANK LTD.

Shanghai Branch: 12 The Bund
Sub-Agency: 9 Broadway

Branches and Agencies:

AMOY	MALACCA
BANGKOK	MANILA
BATAVIA	NAGASAKI
BOMBAY	NEW YORK
CALCUTTA	PEKING
CANTON	PENANG
COLOMBO	RANGOON
FOOCHOW	SAIGON
HANKOW	S. FRANCISCO
HARBIN	SHANGHAI
ILOILO	SINGAPORE
IPOH	SOURABAYA
JOHORE	TIENTSIN
KOBE	TSINGTAO
KUALA LUMPUR	VLADIVOSTOCK
LONDON	YOKOHAMA
LYONS	

Interest allowed on Current Accounts and on Fixed Deposits according to arrangement.

Local Bills Discounted. Credits granted on approved Securities and every description of Banking and Exchange business transacted
Drafts granted on London and the chief commercial places in Europe, India, Australia, Africa, China, Japan and America.

A. G. STEPHEN, Manager.

Banque Industrielle de Chine

CAPITAL.....Francs 75,000,000, one-third of the Capital,
i.e., Frs. 25,000,000, subscribed by

THE GOVERNMENT OF THE CHINESE REPUBLIC

Statutes approved by the Government of the Chinese
Republic on January 11, 1913.

President: ANDRE BERTHELLOT.
General Manager: A. J. PERNOTTE.

HEAD OFFICE:

74 RUE ST. LAZARE, PARIS.

Branches in Peking, Tientsin, Shanghai, Hongkong, Canton,
Foochow, Saigon, Haiphong and Yunnanfou

Bankers:

In France: Societe Generale pour Favoriser le Develop-
ment du Commerce et de l'Industrie en France.
In London: London City & Midland Bank Ltd.
In New York: Redmond & Co.
In Italy: Banca Commerciale Italiana Credito Italiano

Taels, Dollars, Gold Accounts

Interest allowed on Current Accounts in Gold or Local
Currency and fixed deposits on application.

Every description of Banking and Exchange business
transacted.

Savings accounts in Gold and Local Currency.

RUSSO-ASIATIC BANK

CAPITAL (fully paid)	...	...	...	Roubles	55,000,000
RESERVE FUND	...	...	...	"	26,960,000
Capital contributed by the Chinese Government	...	...	...	Kuping Tls.	3,500,000
Reserve Fund	...	...	...	"	1,750,000

Head Office: PETROGRAD

Paris Office: 9 RUE BOUDREAU

London Office: 64 OLD BROAD STREET, E.C. 2.

Bankers:

LONDON: Messrs. Glyn, Mills, Currie & Co.

PARIS: Société Générale pour favoriser le développement du Commerce
et de l'Industrie en France.

Banque de Paris et des Pays-Bas.

LYONS: Société Générale pour favoriser le développement du Commerce
et de l'Industrie en France.

MILAN: Credito Italiano.

Far Eastern Branches:

BOMBAY	HARBIN	SHANGHAI
CHANGCHUN	HONGKONG	TIENTSIN
(KWANCHENZE)	MANCHOULI	VLADIVOSTOCK
CHEFOO	NEWCHWANG	YOKOHAMA
DAIREN (DALNY)	NICOLAYEWSK	
HAILAR	o/AMUR	
HANKOW	PEKING	

Branches and Agencies in Russia, Siberia and Mongolia.

Shanghai Branch:

Interest allowed on Current Accounts and Fixed Deposits in Taels,
Dollars and Roubles. Terms on application.
Local Bills discounted. Special facilities for Russian Exchange.
Foreign Exchange on the principal cities of the world bought and sold.

SAFE DEPOSIT BOXES.

L. JEZIERSKI, } Managers for Asia.
G. CARRÈRE, }

BANK OF COMMUNICATIONS

*(Specially authorised by Presidential Mandates of April 7th, 1914 and October 31st, 1915
making the Bank of Communications a National Bank).*

Head Office: Peking

CAPITAL . . . Kuping Tls. 10,000,000

President: TSAO JOU LIN

Vice-President: JEN FUNG PAO

Every description of Banking and Exchange business transacted.

Interest allowed on Current Accounts and Fixed Deposits according to arrangement.

Credits granted on approved Securities.

Special Facilities for Transfers to all parts of China.

Branches

CHIH LI PROVINCE.—Peking, Tientsin, Tungchow, Paotingfu, Haitien, Tangshan, Shuntefu, Shengfang.

SHANTUNG PROVINCE.—Tsinanfu, Tsininchow, Chefoo, Techow, Tsaochwang, Lungkow.

HONAN PROVINCE.—Kaifeng, Lohyang, Chengchow, Chiaotso, Chowchiakow, Taokow, Leiho, Hsinhsiang, Changtefu, Hsinyangchow.

SHANSI PROVINCE.—Shihchiachwang, Tatungfu, Fengcheng, Yangkao.

KIANGSU PROVINCE.—Shanghai, Soochow, Wusieh, Chinkiang, Yangchow, Tsing-kiangpu, Pukow, Penpu, Hsuchow.

CHEKIANG PROVINCE.—Hangchow, Ningpo.

HUPEH PROVINCE.—Hankow, Shasi, Ichang.

KIANGSI PROVINCE.—Kiukiang.

HUNAN PROVINCE.—Changsha, Changteh, Yochow, Hengchow, Hsiangtan.

SZECHUAN PROVINCE.—Chungking.

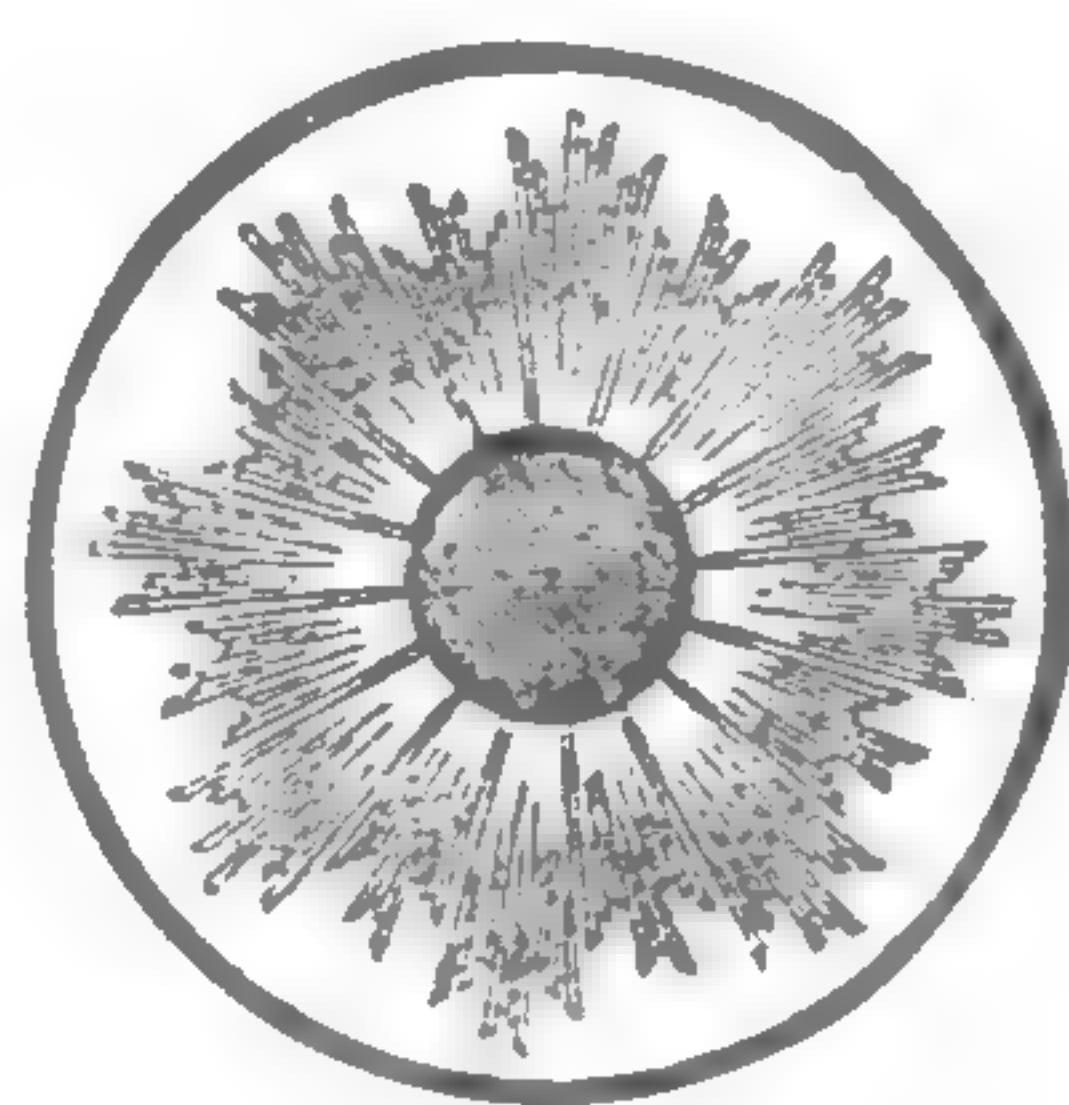
ANHWEI PROVINCE.—Wuhu, Anking, Hsuancheng, Panpu.

KWANGTUNG PROVINCE.—Canton.

THREE EASTERN PROVINCES.—Yinkow, Fengtien, Changchun, Kirin, Tiehling, Sunchiatat, Liaoyang, Harbin, Chihhsien.

SPECIAL DISTRICTS.—Jehol, Kueihuacheng, Lenghsien, Chihfeng, Hsinsi, Kalgan (Chahar).

ABROAD.—Hongkong, Singapore.



The Yokohama Specie Bank, Limited

Capital subscribed . . Yen 100,000,000. Capital paid-up . . Yen 61,000,000. Reserve Fund . . Yen 28,000,000

President :

N. KAJIWARA, Esq.

Vice-President :

S. K. SUZUKI, Esq.

Directors :

N. Kajiwara, Esq.
N. Soma, Esq.
Y. Yamakawa, Esq.
M. Odagiri, Esq.
Baron K. Iwasaki.
K. Tatsumi, Esq.
S. K. Suzuki, Esq.
F. Watanabe, Esq.
I. Matsukata, Esq.
M. Mitsui, Esq.
K. Morimura, Esq.
R. Ichinomiya, Esq.
K. Kodama, Esq.
T. Takeuchi, Esq.



General Manager :

S. K. Suzuki, Esq.

HEAD OFFICE, YOKOHAMA

Manager :

Taro Hodsumi, Esq.

SHANGHAI BRANCH

31 The Bund.

Director and Manager :

K. Kodama, Esq.

BRANCHES AND AGENCIES

Batavia
Bombay
Buenos Aires
Calcutta
Changchun
Chinan Fu
Dairen
Fengtien
Hankow
Harbin

Hongkong
Honolulu
Kaiyuan
Kobe
London
Los Angeles
(sub-office of San Francisco Branch)
Lyons
Manila

Nagasaki
Newchwang
New York
Osaka
Peking
Rangoon
Rio de Janeiro
San Francisco
Seattle

Shanghai
Shimonoseki
Singapore
Soerabaya
Sydney
Tientsin
Tsingtau
Tsinan
Vladivostock

Correspondents at all the Chief Commercial Cities in the World.

LONDON BANKERS :

LONDON COUNTY WESTMINSTER & PARR'S BANK LTD.
LONDON PROVINCIAL & UNION BANK OF ENGLAND LTD.
LONDON JOINT STOCK BANK LTD.

Interest allowed on Current Accounts and Fixed Deposits on terms to be ascertained on application.
Every description of Banking business transacted. For particulars, apply to the Managers.

Asia Banking Corporation

An American Bank

The Asia Banking Corporation offers an American Banking Service and respectfully solicits your patronage. It is organised especially for the purpose of fostering and developing trade between the Orient and the United States. The entire service, information and TIME of our bank, its staff and correspondents are at the disposal of our clients and their friends.

Interest allowed on current, fixed and saving accounts carried in Taels, Mexican Dollars, U.S. Gold, Sterling and Francs.

Foreign or local drafts purchased at best rates, or entered for collection.

Imports and exports financed.

Drafts sold on, and telegraphic payment effected in, any part of the World.

Head Office: New York City

Head Office for Far East: Shanghai

Other Branch Offices at Canton, Changsha, Hankow,
Hongkong, Manila, Peking, Tientsin.

PARK-UNION

FOREIGN BANKING CORPORATION

HEAD OFFICE: 56 Wall Street, New York

Fully Paid Capital and Surplus \$2,250,000

Owned and Controlled by

The National Park Bank, New York

Union Bank of Canada

Directors:

Richard Delafield	H. B. Shaw
Stuyvesant Fish	R. O. McCulloch
Gilbert G. Thorne	Stanley E. Elkin
Cornelius Vanderbilt	Stephen Haas
R. H. Williams	F. E. Kenaston
E. C. Hoyt	W. J. Dawson
A. P. Villa	F. L. Appleby
Sir Wm. Price	T. Fred Aspden

Charles A. Holder, *President*

Branches:

SAN FRANCISCO SEATTLE
PARIS TOKYO YOKOHAMA

Shanghai Branch:

No. 1 KIUKIANG ROAD

Telephone Central 1174

THE ROYAL BANK OF CANADA

HEAD OFFICE, MONTREAL.

LONDON, ENG.

Princes Street, E.C.

NEW YORK.

68, William Street.



BARCELONA.

Plaza de Colón 6.

Collections made.
Drafts sold.

Bills of Exchange purchased.
Trade Enquiries effected.

**533 BRANCHES IN CANADA & NEWFOUNDLAND, ALSO
67 FOREIGN BRANCHES.**

CUBA—Havana (5 Branches), Antilla, Banes, Bayamo, Caibarien, Camaguey, Camajuani, Cardenas, Ciego de Avila, Cienfuegos, Cueti, Florida, Guantanamo, Jatibonico, La Maya, Manzanillo, Matanzas, Moron, Nuevitas, Palma Soriano, Pinar del Rio, Puerto Padre, Sagua la Grande, Sancti Spiritus, Santa Clara and Santiago de Cuba.

PORTO RICO—San Juan, Mayaguez and Ponce. **COSTA RICA**—San José.

DOMINICAN REPUBLIC—S. Domingo, Puerto Plata, Sanchez, S. Pedro de Macoris and Santiago de los Caballeros. **MARTINIQUE**—Fort de France.

GUADELOUPE—Pointe-à-Pitre and Basse Terre.

VENEZUELA—Caracas, Ciudad Bolivar, Maracaibo and Puerto Cabello

BRITISH WEST INDIES.

Antigua—St. John's.

Montserrat—Plymouth.

Bahamas—Nassau.

Nevis—Charlestown.

Barbados—Bridgetown & Speightstown.

St. Kitts—Basseterre.

Dominica—Roseau.

Tobago—Scarborough.

Grenada—St. George's.

Trinidad—Port of Spain and San Fernando.

Jamaica—Kingston.

BRITISH GUIANA—Georgetown, New Amsterdam and Rose Hall (Corentyne).

BRITISH HONDURAS—Belize.

Affiliated in France:

THE ROYAL BANK OF CANADA (FRANCE), 28, Rue du Quatre-Septembre, PARIS.

Correspondents in Canada and West Indies for the
HONG KONG AND SHANGHAI BANKING CORPORATION.

Capital Paid up and Reserves - \$33,000,000.

Total Resources - \$470,000,000.

THE BANK OF EAST ASIA, LTD.

HEAD OFFICE: HONGKONG (2 Queen's Road Central).

Paid-up Capital - \$2,000,000.00

DIRECTORS: 董事局

Pong Wai Ting, *Chairman*. 龐偉廷

Chow Shou Son 周壽臣

Mok Ching Kong 莫晴江

Kan Ying Po 簡英甫

Chan Ching Shek 陳澄石

Li Koon Chun 李冠春

Wong Yun Tong 黃潤棠

Chan Kai Ming 陳啓明

Fung Ping Shan 馮平山

Ng Chang Luk 吳增祿

P. K. Kwok 郭功廷

Kan Tong Po, *Chief Manager*. 簡東浦

Li Tse Fong, *Asst. Manager*. 李子方

A Bank of Character, Strength, Efficiency & Service.

We offer every facility consistent with sound Banking.

Interest allowed on Current Account at 2 per cent. per annum, and on Fixed Deposits at the following rates:—

For 3 months @ 3% per annum

„ 6 „ 4% „

„ 12 „ 5% „

KAN TONG PO, *Chief Manager*.

GASTON, WILLIAMS & WIGMORE, FAR EASTERN DIVISION, INC.,

Cable Address

SHANGHAI

Gastonorge

IMPORTERS

EXPORTERS

ENGINEERS

CONTRACTORS

Head Office : 39 BROADWAY, NEW YORK

AMERICAN HOIST & DERRICK CO.

Builders Hoists, Elevators and Derricks, Railroad Ditchers and Railroad Construction Equipment.

BOWERS RUBBER WORKS.

Belting, Packing, Steam Hose, Mill Hose, etc.

BRADFORD BELTING CO.

Leather Belting.

H. BRINTON COMPANY

Superior Knitting Machinery.

LANSTON MONOTYPE CORP.

Type Composing, Type Casting and Lead, and Rule Casting Machine.

NORTH-WESTERN EXPANDED METAL CO.

Expanded metal for reinforced concrete construction.

MILLER, DUBRUL & PETERS MFG. CO.

High capacity Cigarette and Tobacco Machinery.

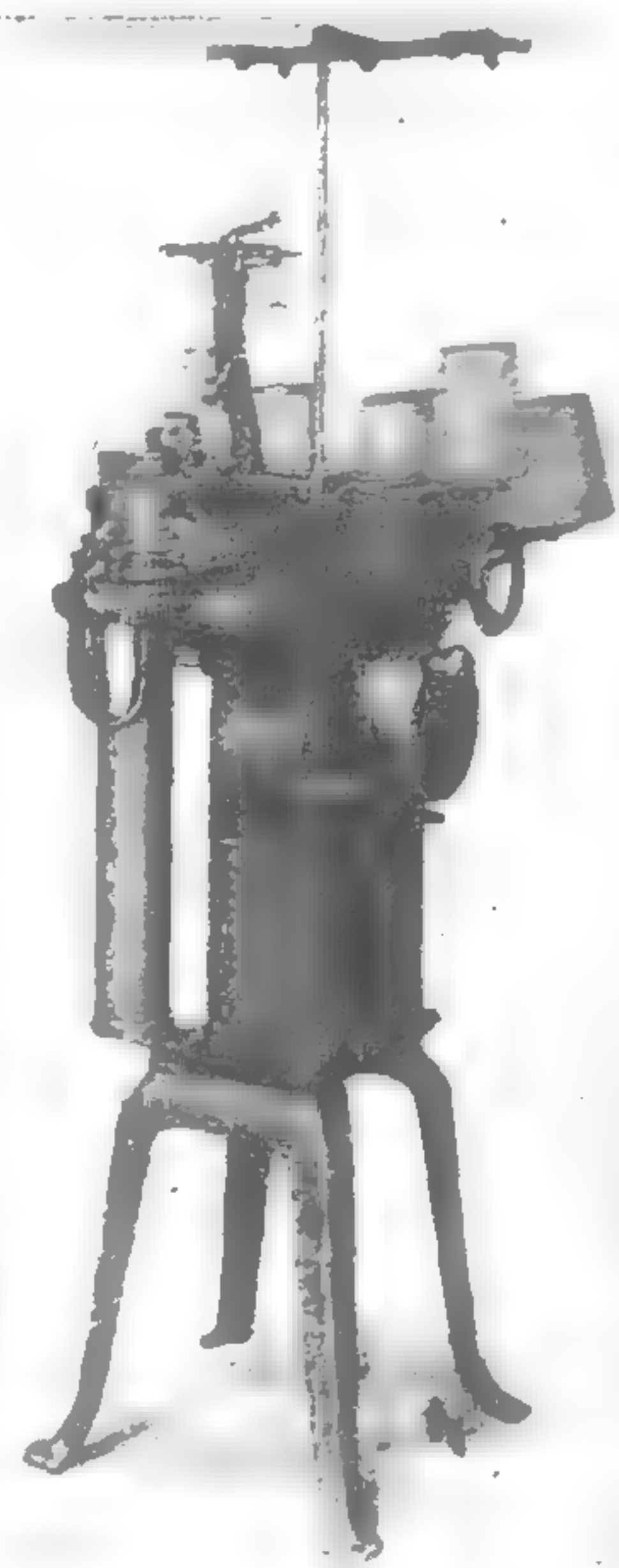
TOCH BROS.

Damp resisting and anti-corrosive paints.

WHITIN MACHINE WORKS.

America's Best Cotton Machinery.

And a long list of other equally prominent manufacturers whose products are required in the Industrial Development of China.

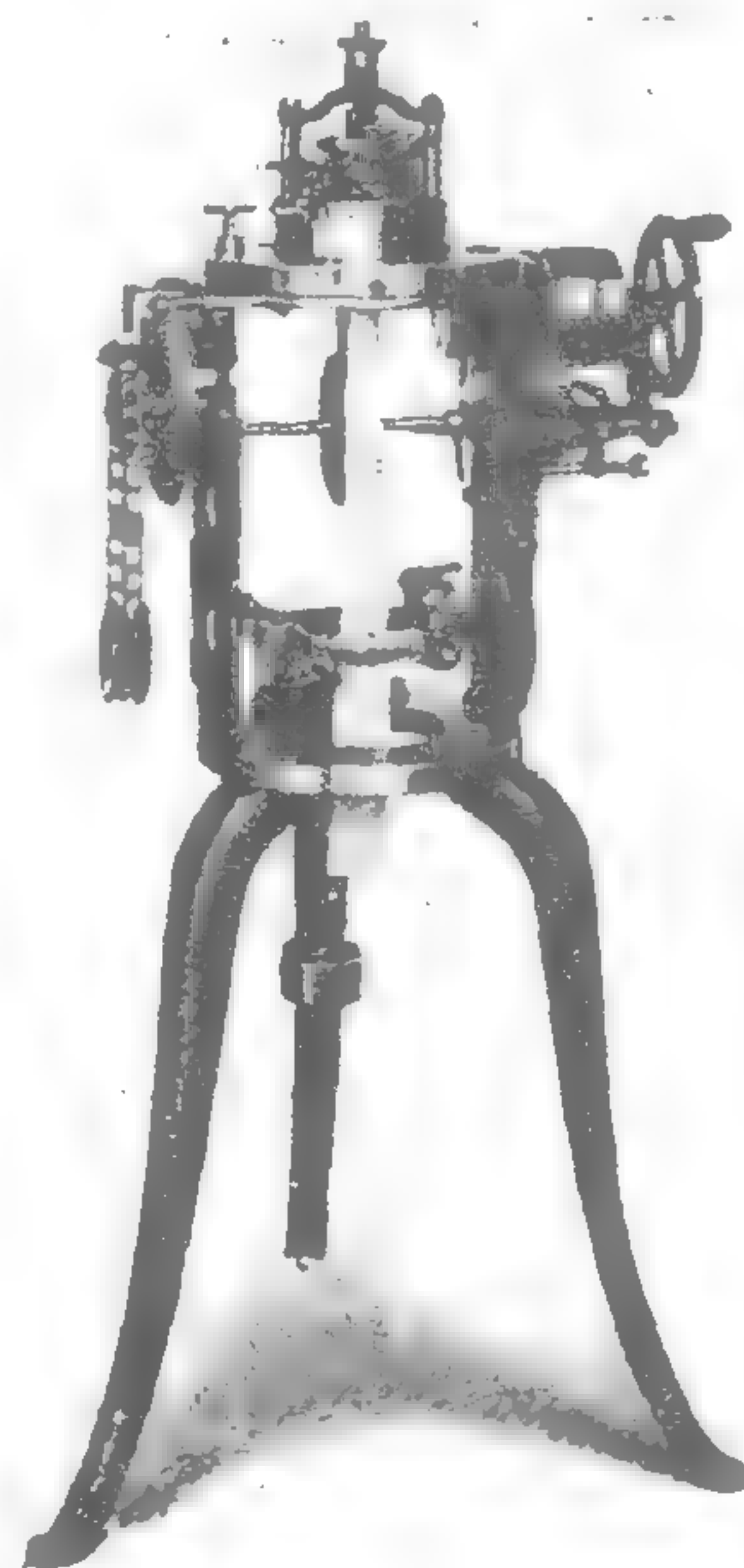
**HOSIERY AND UNDERWEAR MANUFACTURERS**

are invited to inspect our exhibit of.

**BRINTON AUTOMATIC SEAMLESS
KNITTING MACHINES****SPECIAL FEATURES**

Socks manufactured with our machinery have
REAL RIBBED TOPS, EXCLUSIVE
FRENCH WELT, TIGHT ANKLE,
HIGH SPLICE, DOUBLE SOLE and
PERFECT PLATING.

More production than any other machine
making the same style of goods.



American needles and spares always carried in stock. Instructions given. Inquiries solicited.

GASTON, WILLIAMS & WIGMORE, ELECTRICAL ENGINEERING CORPORATION

China Agents for

**WESTINGHOUSE ELECTRIC EXPORT
COMPANY**



Complete Electrical and Steam Equipments for all purposes. "The name Westinghouse is a Guarantee."

CHINESE GOVERNMENT RAILWAYS



SUMMER RESORT AT CHI KUNG SHAN



TOMB OF EMPEROR YU CHENG NEAR LIANG KOW CHWANG

PEKING-HANKOW LINE

“The Road Through The Heart of China”

THE Peking-Hankow Line, the most important section of China's overland route, enables tourists and travellers to get a glimpse of Old China, the train passing through magnificent scenery, traversing the great plains of Chihli, the central portion of Honan and the mountainous regions of the eastern Hupeh province.

The Peking-Hankow route joins at Fengtai the main line of the Peking-Mukden Railway, by means of which this line is connected with the railways in Manchuria, Korea, Japan, and Siberia, while steamer facilities at Hankow bring it into easy communications with the Yangtze River ports and Shanghai.

From the Capital to Hankow the journey occupies 34 hours, by the daily through train which is provided with up-to-date sleeping and dining accommodations.

Chikungshan Mountain (Summer Resort).—Not many Summer Resorts in China inland, can bear comparison with the natural charming views, that reward those who ascend the mountain of Chikungshan, whose summit stands at an altitude of 1,980 ft. On reaching Sintien station, situated 110 miles from Hankow, a serpentine road climbs the mountain, on top of which are hundreds of beautiful bungalows awaiting vacationists. This popular resort is celebrated for its scenery, where an almost unbroken communion with nature can be enjoyed for a week at a time.

Hsi-ling or Western Imperial Tombs.—With their present-day accessibility, there is now little excuse for visitors to Peking omitting a trip to the Western Imperial Tombs, undoubtedly one of the most impressive sights in China. The site of these beautifully adorned Imperial Tombs is close to Liang Ko Chwang station, 79 miles from Peking, which is reached by a Branch-line, formerly built for the exclusive use of the Imperial Sovereigns when visiting the Tombs of their ancestors. The Western Tombs include the mausoleums of four Manchu Emperors and three Empresses, as well as those of a number of Princesses. The region, as a well laid-out park, closely wooded, is justly appreciated for the charming scenery surrounding the Imperial Tombs and is highly recommended to any one in search of the extraordinary and beautiful.

For Particulars, Pamphlets, Tickets, etc., apply to the “Information Bureau” at Peking Head Office or to Tourist Agencies.

SOUTH MANCHURIA RAILWAY

MANCHURIA AND CHOSEN LINES

Circular and Overland Trips at Greatly Reduced Rates

TOURIST TRAVEL OFF THE BEATEN TRACK

Tourists in the Far East should not miss Manchuria. Through Japan, Chosen (Korea), and Manchuria (or vice versâ) is an ideal trip, combining the distinctive characteristics of three unique and profoundly interesting countries.

The Chosen and Manchuria Lines are under the management of the South Manchuria Railway Company. Express trains have been temporarily suspended (except between Fusan and Seoul), but the Ordinary Trains are equal to most American Trains, run at least three times a day from each end, and to some of them Sleeping and Dining Cars are attached. Sleeping berths should be reserved in advance.

Hotels under the Company's management are established on foreign lines at SEOUL (capital of Chosen), FUSAN and SHINGISHU (the two extremities of Chosen), KONGOSAN (the famous Diamond Mountain of Korea, rivalling Switzerland in scenery), MUKDEN (ancient capital of China, home of the Manchuria Dynasty, noted for Imperial Palaces and Tombs), CHANGCHUN (junction for three railways and "key to Manchuria"), PORT ARTHUR (of world-wide fame for its historic sieges and ruined forts), DAIREN (one of the greatest commercial cities in the Orient), and HOSHIGAURA (the finest seaside resort in North China).

From Dairen there are frequent and regular steamers to and from Shanghai, Tsingtao, Tientsin, etc.

**For pictorial guide-books, pamphlets, and further particulars, apply to the
Tourist and Ticket Agencies, or direct to the**

SOUTH MANCHURIA RAILWAY COMPANY

Head Office: DAIREN

Branch Offices: TOKYO, SEOUL, HARBIN, KIRIN, PEKING, AND SHANGHAI

Telegraphic Address: MANTETSU.

Codes: A.B.C. 5th Edition, and Lieber's

CHINESE GOVERNMENT RAILWAYS



TRAIN DE LUXE AT TIENTSIN EAST STATION

The Peking-Mukden Line

Through service from Peking to Mukden, connecting at Mukden with the South Manchuria Express from Trans-Siberian Route. At Peking connection is made with the Peking-Hankow Railway for Hankow and Yangtze Ports, and Intermediate Points reached by the Chen-Tai Line to Taiyuanfu, the Tao-Ching Line, and the Pienlo Railway to Kaifengfu and Honanfu. Connection is also made at Peking with the picturesque Kalgan Line, "The road to the Great Wall." At Tientsin (Central) connection is also made with the Tientsin-Pukow line for Tsinanfu and Shanghai.

THE RAILWAYS OF NORTH CHINA PASS THROUGH THE MOST INTERESTING PART OF CHINA

PEKING.—The Capital, with the Walls, Palaces, Temples and Tombs.—**TIENTSIN.**—The Great Trade Centre of North China.—**TONGSHAN.**—The Largest Mining and Industrial Town in the Country.—**SHANHAIKWAN.**—Where the Great Wall ends at the sea.—**NEWCHWANG.**—The Busy Commercial Port of Manchuria.—**MUKDEN.**—The Ancestral home of the Manchu Dynasty. A Miniature Peking, with its Walls, Imperial Palaces, Temples and Tombs.



DINING CAR ON TRAIN DE LUXE

The through trains are equipped with Buffet and Dining Car Service. A Comfortable, Modern Train De Luxe of Compartment Sleeping Coaches is operated in connection with the through service of the Trans-Siberian and South Manchurian Railways.



FIRST CLASS SLEEPING BERTH, TRAIN DE LUXE

Through tickets to London and other places in Europe can be obtained at Peking and Tientsin from which stations passengers' luggage can be registered through to destination. Through tickets are issued and passengers' baggage registered through between the important Stations on the Peking-Mukden Railway and the South Manchuria Railway, Chosen (Korean) Railway and Imperial Government Railways of Japan.

For information regarding the many places of interest in China, Tourists will find "The Travellers' Handbook for China" with maps most useful. It is obtainable at any of the offices of Thos. Cook & Sons. The Chinese Government Railways Time Table book with Railway map can be had at any of the offices of Thos. Cook & Sons, and the International Sleeping Car Co., Hotels, Clubs and at all important Stations. Full particulars on application to any of the Stations or to the Traffic Manager of any of the Railways mentioned and on application to any office in America, Europe or the Far East of The Cie. International des Wagons-Lits, Thos. Cook & Sons, or

TRAFFIC MANAGER, CHINESE GOVERNMENT RAILWAYS (PEKING-MUKDEN), TIENTSIN.

中華民國政府吉長鐵路行車時刻表

CHINESE GOVERNMENT RAILWAYS—KIRIN-CHANGCHUN LINE

TIME TABLE

DOWN TRAINS		STATIONS	UP TRAINS	
DAILY			DAILY	
MIXED	MAIL		MAIL	MIXED
P.M. 1.20	A.M. 8.30 d.	TOUTAOKOU	P.M. a. 6.00	A.M. 11.10
1.30 1.39	8.40 a. 8.42 d.	2.79 CHANGCHUN	d. 5.50 a. 5.45	11.00 10.56
2.14 2.19	9.12 a. 9.14 d.	12.69 KALUN	d. 5.15 a. 5.13	10.22 10.19
2.49 2.51	9.44 a. 9.45 d.	11.13 YINMAHO	d. 4.43 a. 4.42	9.46 9.40
3.07 3.09	9.58 a. 10.00 d.	5.38 HSIACHIUTAI	d. 4.29 a. 4.27	9.25 9.20
3.22 3.24	10.12 a. 10.13 d.	4.58 YINGCHENG TZE	d. 4.14 a. 4.13	9.07 9.05
3.51 3.55	10.35 a. 10.43 d.	9.14 TUMENLING	d. 3.53 a. 3.48	8.42 8.37
4.42 4.46	11.22 a. 11.24 d.	9.26 HUAPICHANG	d. 3.08 a. 3.06	7.51 7.47
5.07 5.08	11.37 a. 11.38 d.	6.46 KUTIENTZE	d. 2.52 a. 2.51	7.30 7.28
5.27 5.32	11.53 a. 11.55 d.	6.83 KIUCH N	d. 2.37 a. 2.35	7.11 7.07
5.58	12.15 a.	8.30 KIRIN	d. 2.15	6.45



STREET SCENE, CHANGCHUN.

NOTICE:—"d" = Departure. "a" = Arrival. 25th November, 1917

THE PIENLO RAILWAY

(Kaifeng-fu to Honanfu)

"THE FIRST SECTION OF THE PROJECTED CENTRAL TRUNKLINE"



THE SUNG TOMBS NEAR KAIFENG-FU ON THE PIENLO RAILWAY.

The line connects with the through service of the Peking-Hankow Railway at Tcheng Tchéou, enabling the traveller to visit Kaifengfu, the provincial capital of Honan, and the old capital of the Empire at Honanfu.

CHINESE GOVERNMENT RAILWAYS SHANGHAI-NANKING RAILWAY



ACCELERATED SERVICE BETWEEN SHANGHAI AND PEKING

Express and Fast Trains run daily between Shanghai North, Soochow, Wusih, Changchow, Tanyang, Chinkiang and Nanking, to which places weekend tickets, at reduced rates, are issued.

Through Bookings to Chinese Government and Japanese Lines
Reduced Rates for Picnic and other Parties

For further information apply to THE TRAFFIC MANAGER, SHANGHAI NORTH STATION,
TELEPHONE No. 900

UNITED STATES STEEL PRODUCTS CO.

Exporters of the products of

CARNEGIE STEEL Co.

ILLINOIS STEEL Co.

THE LORAIN STEEL Co.

NATIONAL TUBE Co.

SHELBY STEEL TUBE Co.

WESTERN TUBE Co.

AMERICAN BRIDGE Co.

AMERICAN STEEL & WIRE Co.

AMERICAN SHEET & TIN PLATE Co.

TENNESSEE COAL, IRON & RAILROAD Co.

MINNESOTA STEEL Co.

CANADIAN STEEL CORPORATION.

STEEL SHEETS, plain and corrugated; galvanized and painted. Galvanized sheets "APOLLO" brand. Black sheets "EAGLE" brand. Copper bearing sheets "KEYSTONE" brand, either black or galvanized.

TIN PLATE, "COKE," "CHARCOAL" and "TERNE."

PIPE, black and galvanized wrought, for steam, gas and water; American or English Standards. Lapwelded steel BOILER TUBES. CASING, TUBING and DRIVE PIPE. Oil and Gas line Pipe. CONVERSE and MATHESON lead joint pipe. TUBULAR STEEL POLES. Lapwelded and seamless CYLINDERS. SEAMLESS STEEL TUBING.

STEEL RAILS (Vignole) of all sections. Groove and guard rails for tramways. RAILS and ACCESSORIES. SPECIAL TRACK WORK, points and crossings. Manganese Steel Insert and Solid Manganese Steel for electric and steam railroads. Portable SWITCHES, switch stands, rail braces, compromise joints, etc. STEEL RAILWAY TIES (Sleepers).

STRUCTURAL MATERIAL of all kinds; Joists, Channels, Tees, Angles, etc., for Bridges, Buildings and General Constructive work. Best quality BESSEMER and BASIC OPEN HEARTH STEEL BARS, Rounds, Squares, Flats, Ovals and Hexagons. Special bolt, rivet and shafting steel. STEEL SHEET PILING, STEEL MINE TIMBERS, OIL WELL DERRICKS, SCHOEN SOLID FORGED AND ROLLED STEEL WHEELS. VANADIUM STEEL, GEAR BLANKS.

FORGED AXLES of highest quality for Locomotives, Railroad and Tramway Cars. FORGINGS.

HOOPS for barrels and casks, and TIES for baling.

We Solicit Inquiries accompanied by exact specifications stating quantity

UNITED STATES STEEL PRODUCTS Co.

Union Building No. 4 The Bund, Shanghai

Telegraphic Address :
"STEELYARD" SHANGHAI

Head Office: No. 30 CHURCH STREET, NEW YORK

Branch Offices at

ANTWERP	BRUSSELS	GLASGOW	MEXICO CITY	RIO DE JANEIRO	TOKYO
BARCELONA	BUENOS AIRES	HAVANA	MONTREAL	SANTIAGO	TORONTO
BATAVIA	CALCUTTA	JOHANNESBURG	NEW GLASGOW	SAO PAULO	VALPARAISO
BIRMINGHAM	CAPE TOWN	LIMA	PARIS	SOERABAYA	VANCOUVER
BOMBAY	GENOA	LONDON	PETROGRAD	SYDNEY	WINNIPEG

MILD STEEL PLATES for ships' tanks, stacks and boilers. Flange and fire-box steel. Checkered plates.

WIRES, baling and fencing; all classes of coated and uncoated for manufacturing purposes. Genuine "IOWA," "GLIDDEN" and "WAUKEGAN" barb wire. Fence and netting STAPLES. Tinned mattress, broom and bottling wire. Woven Wire Fence. FABRIC FOR REINFORCING CONCRETE. Wire Nails and Tacks of all descriptions

INDESTRUCTIBLE CYLINDRICAL STEEL FENCE POSTS.

HORSE and MULE SHOES. COLD ROLLED PLATES for deep stamping, etc

AERIAL TRAMWAYS. Bleichert System. Locked coil track cable, locked wire cable and smooth coil track cable for Aerial Tramways.

IRON and STEEL WIRE ROPE, bright and galvanized for all purposes. Bright and galvanized SASH CORD, galvanized CLOTHES LINES. Bare and insulated COPPER WIRE and CABLE of every description.

COPPER RAIL BONDS, solid and stranded for electric railways.

WEATHER PROOF INSULATED telephone and signal WIRE. Galvanized telegraph and telephone wire.

ROUND and FLAT WIRE STEEL SPRINGS. PIG IRON, COAL and COKE.

FABRICATED MATERIAL for railway bridges, highway bridges, turntables, transfer tables, barges, steel chimneys, steel buildings, mill buildings, office buildings, tanks, towers, transmission towers, trestles, cylinder piers.

desired, with full particulars as to size, weight, finish, packing, etc. Special catalogue on application.



A COMPLETE RAILWAY NETWORK OF
6,000 MILES

Thoroughly Equipped with all up-to-date Improvements, and reaching every nook and corner of the country.

**Reserved Cars, Private Cars, Special Trains, on
Previous Arrangement for Tourist Parties of all sizes**

First-Class equipment and fast service is maintained on the fine express and through trains, which carry chair, sleeping and dining cars.

Frequent service is provided between all the principal cities of the Empire.



NIJUBASHI (TWIN BRIDGES). THE MAIN APPROACH
TO THE IMPERIAL PALACE, TOKYO



NAGOYA CASTLE. BUILT IN 1611, NOTED FOR ITS
COPPER-BRONZE ROOFS CROWNED BY GOLD DOLPHINS



THROUGH BOOKING TO AND FROM CHINA

Single and Return Tickets between China and Japan via Chosen

Period of Validity : Single, 40 days: Return, 110 days. 20% Reduction for Return Tickets

China-Japan Party Trip Tickets

Period of Validity : Two months. Reduction : 25%-50% for 10 or more passengers

China-Japan Circular Tour Tickets

Period of Validity : Four months. Reduction : 30% for Railway ; 25% for Steamer

China-Japan Parcel Through Traffic

Parcel through conveyance between the principal stations in China and Japan via Chosen at low rates

FOR PARTICULARS, TIME-TABLES, MAPS, ETC., PLEASE APPLY TO
TRAFFIC DEPARTMENT, IMPERIAL GOVERNMENT RAILWAYS,
TOKYO



NIKKO SHRINE, THE ARCHITECTURAL GLORY OF WHICH
IS WELL KNOWN ALL OVER THE WORLD



KIYOMIZU TEMPLE, COMMANDING A BIRD'S-EYE
VIEW OF KYOTO

CHINESE GOVERNMENT RAILWAYS

CHENG-TAI RAILWAY

(Chinese Government Shansi Line—Chengtingfu to Taiyuanfu)



VIEWS ALONG ROUTE OF CHENG-TAI RAILWAY

The trains of this line connect with the through service of the Peking-Hankow Railway, affording Travellers the opportunity of seeing the most picturesque part of China. The line passes through a mountainous section of country, rich in Mineral Resources to the Provincial Capital of Shansi at Taiyuanfu. This interesting city is a great educational centre, and famous for the fine quality of its artistic embroideries.

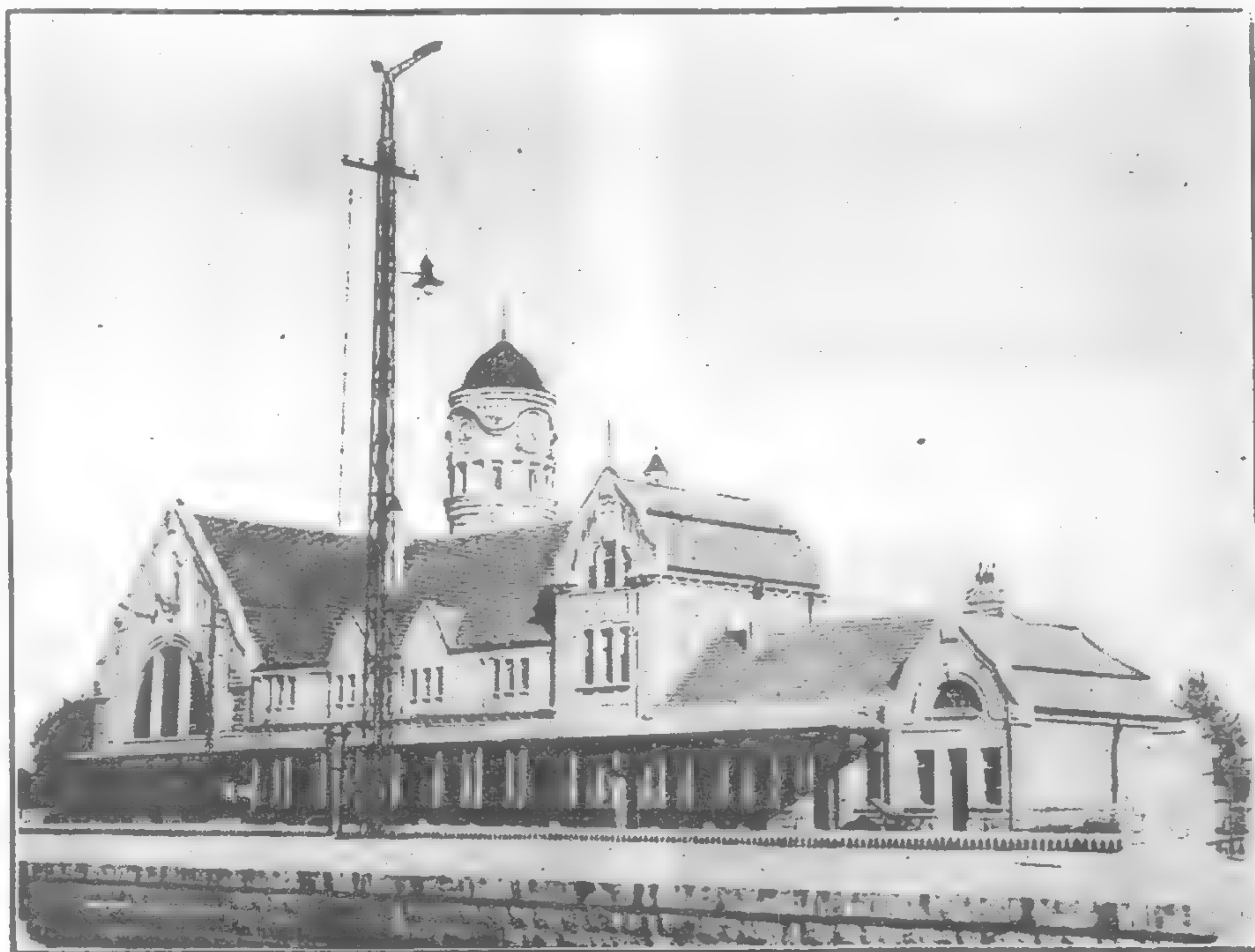
PEKING-SUIYUAN LINE

“The Road to the Great Wall”



This line follows the ancient caravan route and military highway from Mongolia into China by the way of the historic Nankow Pass. This pass is the Key to Peking, and Kalgan is the gate of the Country. From here the great camel caravans set out on their long journeys across Mongolia to Siberia and Central Asia. This old frontier mart, retaining its time-honored characteristics, one of the most interesting sights of the Old World, is made accessible by the new railway. The line also carries the passenger in two hours from Peking to Nankow, when the Great Wall of China and the Ming Tombs may be seen. A foreign hotel is operated by the railway authorities at Nankow, where chairs and guides may be secured for the Tombs.

CHINESE GOVERNMENT RAILWAYS. TIENTSIN-PUKOW LINE.



TSINANFU STATION.

THE above-named line, with its SOUTHERN end at PUKOW and NORTHERN end at TIENTSIN is having its through mail trains equipped with SLEEPING and BUFFET CARS running both ways every day. Comfortable seats and best meals are supplied on the trains. SANITARY ARRANGEMENTS are kept in perfect order and condition. A ferry steamer of modern type is provided for the conveyance of passengers across the river BETWEEN NANKING and PUKOW. Along this line travellers are afforded the opportunity of seeing the views of the country and many places of historic antiquities that will serve interest to the travelling observers. The time for the running of the trains are so scheduled as to make them CONNECT WITH the trains of the SHANGHAI-NANKING LINE on the southern terminus and those of the PEKING-MUKDEN LINE at the northern end. Travellers who intend to go to PEKING, KALGAN, TATUNG, MUKDEN, SOUTH MANCHURIA and SIBERIA or VICE VERSA are enabled to effect their journeys of a great distance at a very short space of time, it being considered the SAFEST and QUICKEST route for the travelling public.

For further particulars, please apply to:

THE HEAD OFFICE OF THE RAILWAY, TIENTSIN, the Agencies of Messrs. THOMAS COOK AND SON, the INTERNATIONAL SLEEPING CAR AND EXPRESS TRAINS COMPANY or the NORDISK RESEBUREAU.

Telegraphic Address: "TSINPURY" TIENTSIN.

Codes: A.B.C. 5th Edition.

可歷國局天道志途期亞及至京時觀區利輪口事次車快北津
通公臥或津也游萬而等奉北奉刻者古沿迎間皆安餐車至浦
函司車通津如歷里至處天京均南之蹟途送近極舒車往天路
等公濟浦有者達行往南張相與心極風旅添講關食來津綫
經司隆鐵詢所於旅來滿家聯滬目多景客設求於品並每南
理北洋路問樂旦視均西口接甯且足名尤新南衛精附日達
處方行管事於夕爲可伯大凡北行鑿勝稱式京生潔掛均浦
均游萬理項取有坦尅利同欲與車游之便渡浦各座臥有口

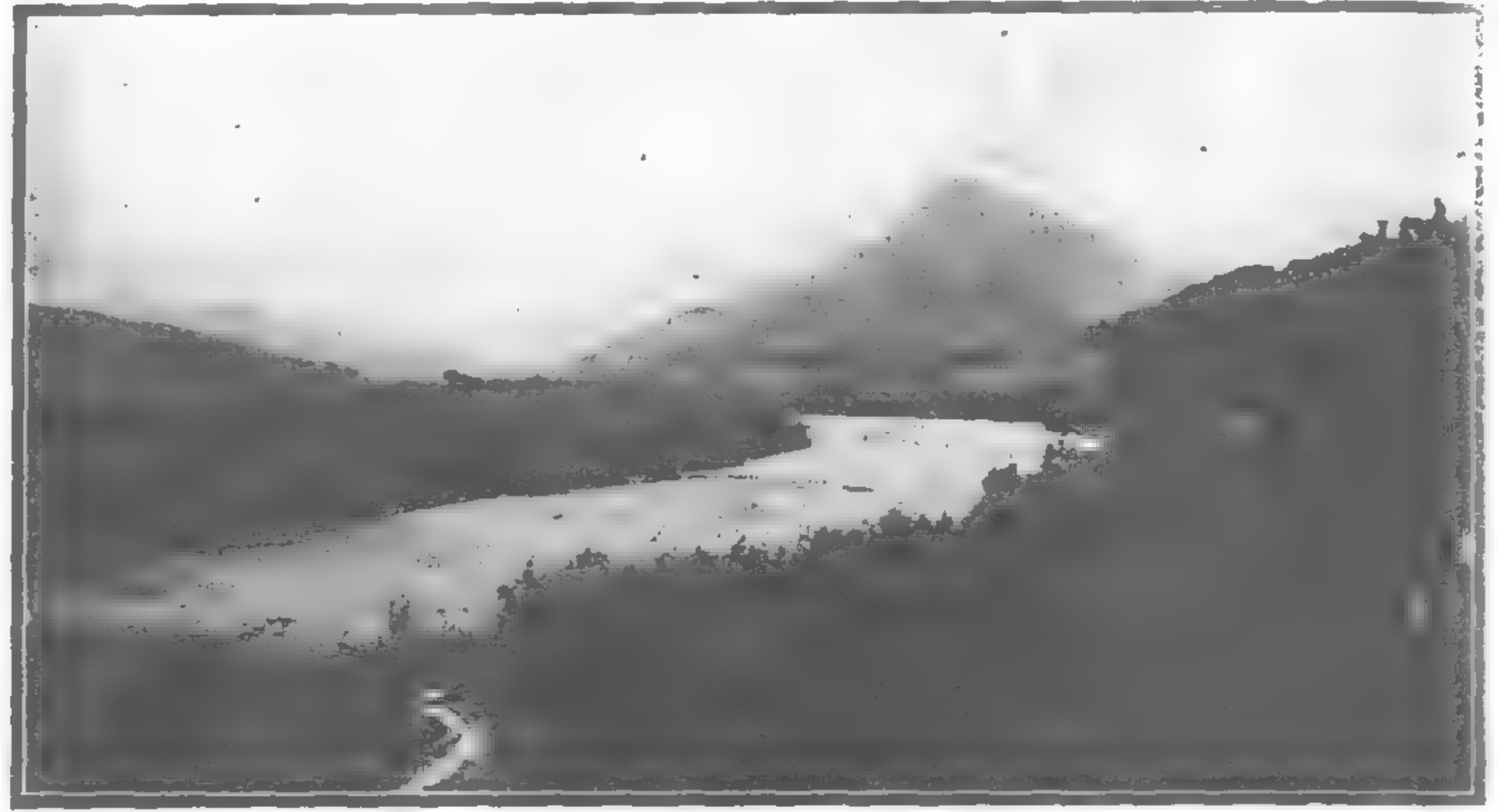
CANTON-KOWLOON RAILWAY

VIEWS ON THE BRITISH SECTION (22 MILES)

VIEWS ON THE CHINESE SECTION, 89 MILES (Chinese Government Railways)

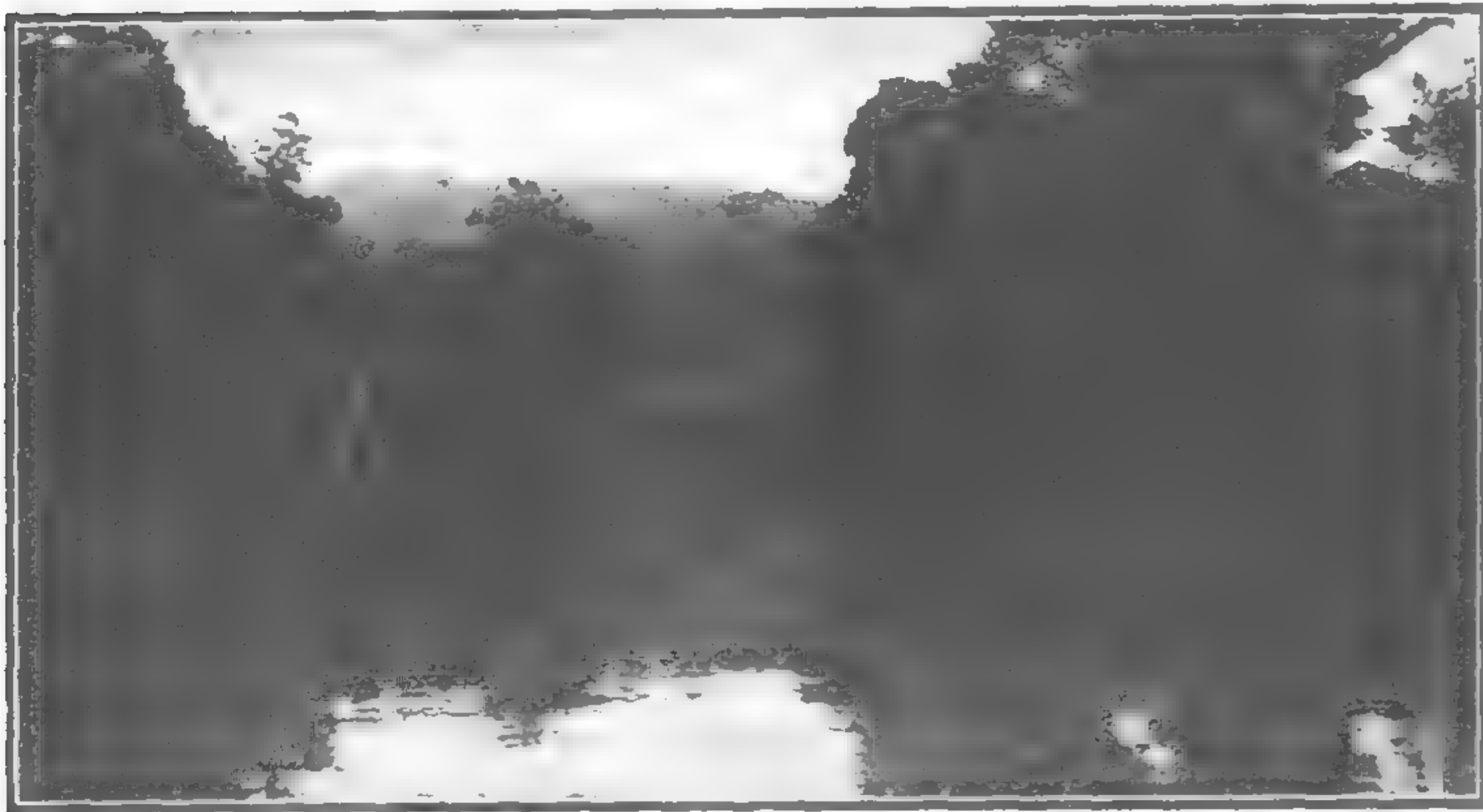


CANTON-KOWLOON RAILWAY—APPROACH TO KOWLOON



SCENERY NEAR CHEUNG MUK LOW—C. K. RAILWAY

QUICKEST AND CHEAPEST ROUTE BETWEEN CANTON AND HONGKONG THROUGH VARIED AND BEAUTIFUL SCENERY



CANTON-KOWLOON RAILWAY—SCENE ALONG ROUTE



SCENERY ALONG ROUTE

THREE EXPRESS CORRIDOR TRAINS EACH WAY DAILY—HOT MEALS AND OTHER REFRESHMENTS SERVED



CANTON-KOWLOON RAILWAY—CROSSING TIDE FLATS

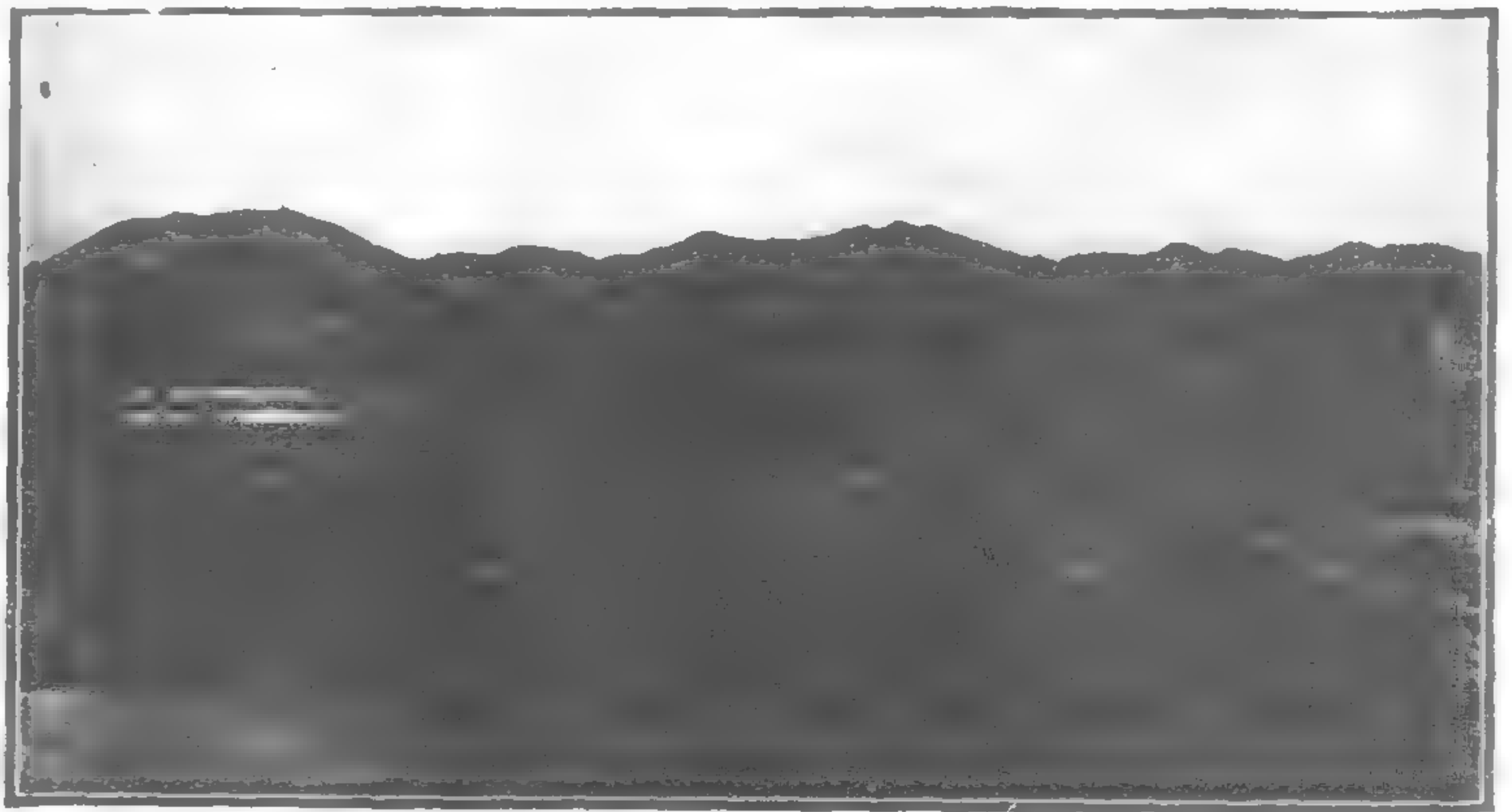


KAN SUI BRIDGE—C. K. RAILWAY

3½ HOURS BETWEEN UP AND DOWN TRAINS FOR BUSINESS MEN OR TOURISTS AT CANTON OR HONGKONG



CANTON-KOWLOON RAILWAY—EMBANKMENT APPROACH TO BRIDGE



GRAND CURVE NEAR SHEUNG PING

TIME TABLE from November 7th, 1918

Leave Hongkong (Kowloon) *8.05, 9.20 a.m., *3.00 p.m.
Arrive Canton (Tai Sha Tou) 11.50 a.m., 5.10, 6.40 p.m.

Leave Canton (Tai Sha Tou) *7.30, 8.35 a.m., *3.30 p.m.
Arrive Hongkong (Kowloon) 11.10 a.m., 5.38, 7.25 p.m.

Special terms and special trains for large tourist parties. For further particulars see advertisements or apply to

*Express

THE MANAGER (British Section), Kowloon, HONGKONG.

THE ADMINISTRATION (Chinese Section), CANTON.

Andersen, Meyer & Co., Ltd.

Shanghai, 4-5 Yuen-Ming-Yuen Road

Branches at Canton, Changsha, Hankow, Harbin, Hongkong, Kalgan, Peking, Tientsin, Tsinan, Urga, Vladivostock, Yunnanfu and 80 Wall St., New York.



Telephone Central 778

ENGINEERS AND CONTRACTORS

Machinery and Supplies

Sole Agents for :

Electrical and Power Plants

International General Electric Co. (See page No. 55)—Electrical Machinery and Apparatus.
 British Thomson-Houston Co.—Electrical Machinery and Apparatus.
 China General Edison Co.—Manufacturing G-E Edison Lamps.
 Electric Storage Battery Co.—Lead Storage Batteries.
 Milburn Wagon Co.—Electrical Vehicles and Accessories.
 Walker Electric Vehicle Co.—Electric Trucks.
 Victor Electric Corporation.—X-Ray Apparatus and Equipments.
 National Carbon Co.—Dry cells and carbon products.
 Standard Underground Cable Co.—Bare and insulated copper wire and cable.
 Spray Engineering Co.—Air washers and cooling systems.
 James Leffel & Co.—Engines and boilers.
 Pelton Water Wheel Co.—Water Wheels, Turbines & Governors.
 F. Reader & Sons.—Steam Engines.
 Harrison Safety Boiler Works.—Feed Water Heater, Purifiers, Steam and Oil Separators.
 Worthington Pump & Machinery Corporation.—Condensing Plants, Centrifugal Pumps, Waterworks Pumps, Power Pumps, Steam Pumps, Cooling Towers, Air Compressors.
 Skinner Engine Co.—Uniflow Engines.
 Strong, Carlisle & Hammond Co.—Power Plant Accessories.
 Chapman Valve Manufacturing Co.—Steam Valves.
 Elliot Co.—Logonda Valves, Oil Extractors & Tube Cleaners.
 Fairbanks-Morse & Co. (See page No. 83)—Marine and Stationary Oil Engines.
 Hoovens, Owens, Rentschler Co.—Hamilton Corliss Engines.
 Murphy Iron Works.—Murphy Automatic Furnaces.
 Northern Equipment Co.—Copes Boiler, Feed-water Regulators and Pumps.
 Sanford Riley Stoker Co.—Sanford Riley Underfeed Stokers.
 Ivanhoe Regent Works. } Electric Light Shades and Reflectors
 Holophane Glass Co. } and Defusing Bowls.

Mill and Factory Equipment

Saco-Lowell Shops (See inside back cover).—Textile Machinery.
 American Moistening Co.—Humidifiers.
 Barnard & Leas Manufacturing Co.—Flour Mills.
 Scott & Williams.—Knitting Machinery.
 Tolhurst Machine Works.—Moisture Extractors.
 Worthington Pump & Machinery Corporation.—Cement Mills.
 American Machine & Manufacturing Co.—Oil Mills.
 Standard Mill Supply Co.—Mill Supplies.



Cable "Danica"

Railway and Tramways

Baldwin Locomotive Works (See page No. 27)—Locomotives.
 J. G. Brill & Wason Co.—Tramway Cars, Passenger Cars and Trucks.
 McConway & Torley Co.—Janney-Penn Couplers.

Mining Machinery and Supplies

Hercules Powder Co.—Explosives, Caps and Fuses.
 Braun Knecht-Heimann Co.—Assaying Apparatus.
 Lehigh Car, Wheel & Axle Works.—Rolls, Crushers, Pulverizing Machinery.
 Lidgerwood Manufacturing Co.—Hoisting Engines.
 Power & Mining Machinery Co.—Mining Machinery.
 Fred. M. Prescott Pump Co.—Sinking and Mine Pumps.
 Sullivan Machinery Co. (See page No. 68)—Mining Machinery.
 Chapman Valve Manufacturing Co.—Full Line of Valves.
 Worthington Pump & Machinery Corporation.—Mining Machinery, Air Compressors, Pumps.

Machinery and Engineering Supplies

Dodge Sales & Engineering Co.—Power Transmission Machinery.
 American Tool Works Co.—Machine Tools.
 Betts Machine Co.—Machine Tools.
 Cincinnati Electric Tool Co.—Machine Tools.
 Gleason Machine Tool Co.—Machine Tools.
 E. Horton & Sons Co.—Chucks.
 Seneca Falls Manufacturing Co.—Lathes.
 American Wood Working Machine Co.—Wood Working Machinery.
 R. & J. Dick, Limited.—"Balata" Belting.
 Chas. A. Schieren Co.—Leather Belting.
 Kelly Springfield Road Roller Co.—Road Rollers.
 Keuffel & Esser Co.—Engineering Instruments and Materials.
 A. B. See Elevator Company—Elevators.
 U. S. Graphite Co.—Boiler and Lubricating Graphite.
 Garlock Packing Co.—Packing.
 Fairbanks-Morse & Co.—Oil Engines.
 Buffalo Gasoline Motor Co.—Marine Motors.

Building Materials (Import Department)

Certain-Teed Products Corporations.—Patent Roofing Material.
 C. C. Belknap Glass Co.—Glass—Plate, Wire, Window ; Mirrors.
 Sherwin-Williams Co.—Paints and Varnishes.
 National Lead Co.—White and Red Lead.
 Simmons Hardware Co.—Edged Tools, Builders' Hardware.
 Corrugated Bars and Triangle-Mesh.



RECONSTRUCTION



Everything a Builder requires

FOR COTTAGE
VILLA OR CASTLE.
PUBLIC BUILDING
OR FACTORY.

Illustrated Catalogues

Submit your Application
for First Series when issued
to






CASTINGS.
COOKING.
SANITARY.

YOUNG & MARTEN LTD

MANUFACTURERS & MERCHANTS
Every Requisite for Building Construction

Phone - STRATFORD 2 (Miles). **CALEDONIAN WORKS** **STRATFORD** **LONDON** E. 15. Telegrams - "Y&M LONDON."



IRONWORK.
LIGHTING.
HEATING.

CHINESE GOVERNMENT RAILWAYS

The Tao-Ching Railway

TAOKOU TO CHINGHUA
(CHINESE GOVERNMENT HONAN LINE)



A VIEW ON THE TAO-CHING RAILWAY, WITH MINE IN DISTANCE

"CHINA'S ROAD OF ANTHRACITE"

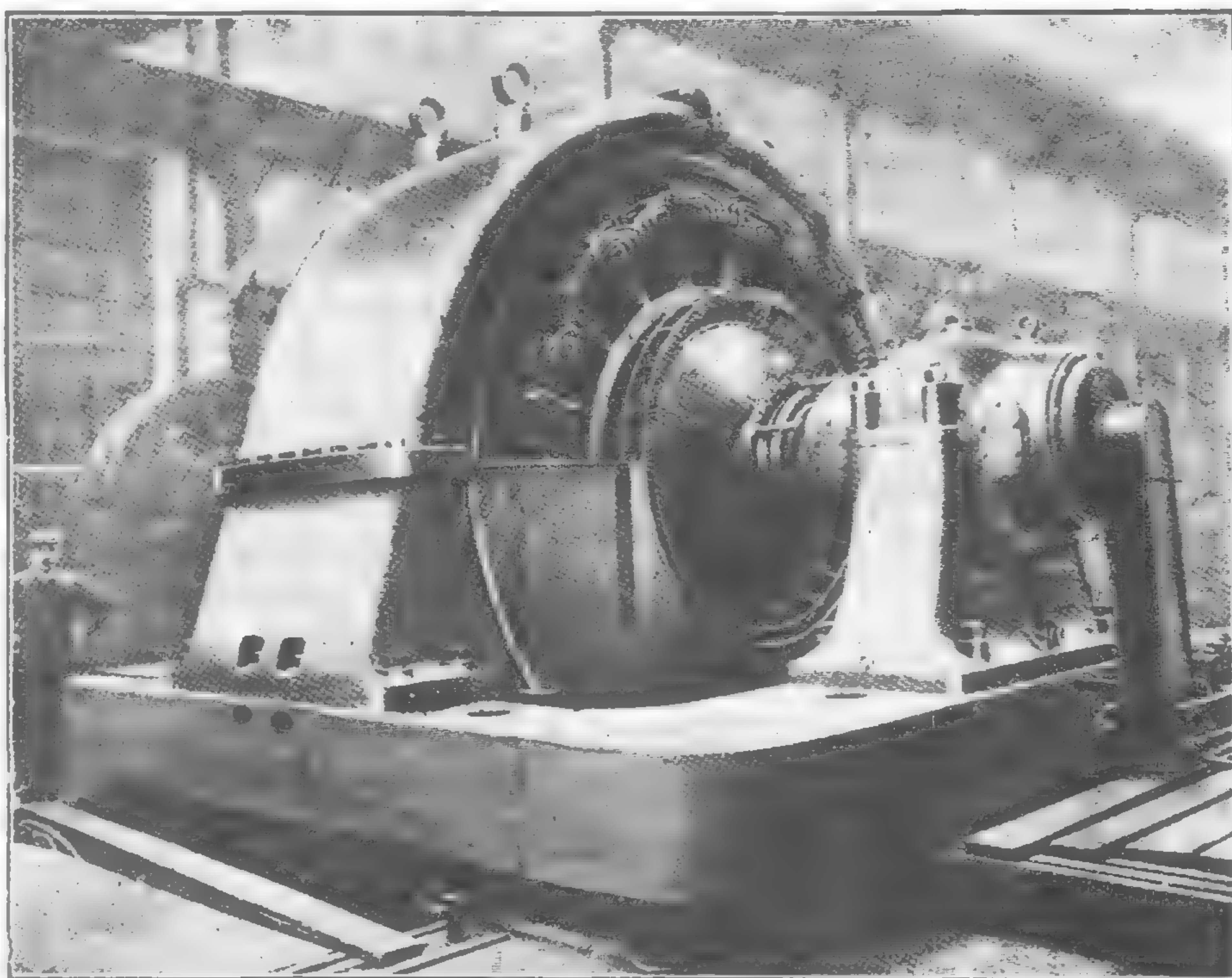
The trains of this line connect at Sin-Siang-Sien with the through service of the Peking-Hankow Railway. It taps the great Anthracite Coal Deposits of Shansi, and conveys the products of the Mines to the nearest navigable river.

THE ENGLISH ELECTRIC COMPANY, LIMITED

WORKS—
ORDNANCE WORKS, COVENTRY.
PHOENIX WORKS, BRADFORD.

DICK, KERR WORKS, PRESTON.
ORDNANCE WORKS, SCOTSTOUN.
WILLANS WORKS, RUGBY.

HYDRO-ELECTRIC MACHINERY



ONE OF SIX 7,775 K.V.A. HYDRO-ELECTRIC GENERATORS
SUPPLIED TO A JAPANESE COMPANY

THE COMPANY ARE MANUFACTURERS OF: STEAM
TURBINES, CONDENSERS, DIESEL OIL ENGINES, ELECTRIC
POWER AND SUB-STATION PLANT, COMPLETE ELECTRIC
RAILWAY AND TRAMWAY EQUIPMENTS, ROLLING STOCK,
A.C. & D.C. MOTORS, SWITCHGEAR, ETC.

JAPANESE OFFICE:

DICK, KERR & CO., LTD., 3 ITCHOME, UCHISAIWAICHO, KOJIMACH-KU, TOKYO

HEAD OFFICE:

QUEEN'S HOUSE, KINGSWAY, LONDON, W.C.2

CABLES—"ENELECTICO LONDON"



Y-332

BROWN SHOES FOR EVERY REQUIREMENT

FOR every member of the family, and for every use, there is a style and model of *Brown Shoe* that is made to please the most discriminating tastes.

"BROWN" SHOES

The styles illustrated herewith are two of the most popular "White House" models for men. They are only two, however, of the many styles to be found in "White House" shoes. Everywhere, *Brown Foot-wear* is the choice of discriminating men—for street wear or for dress.

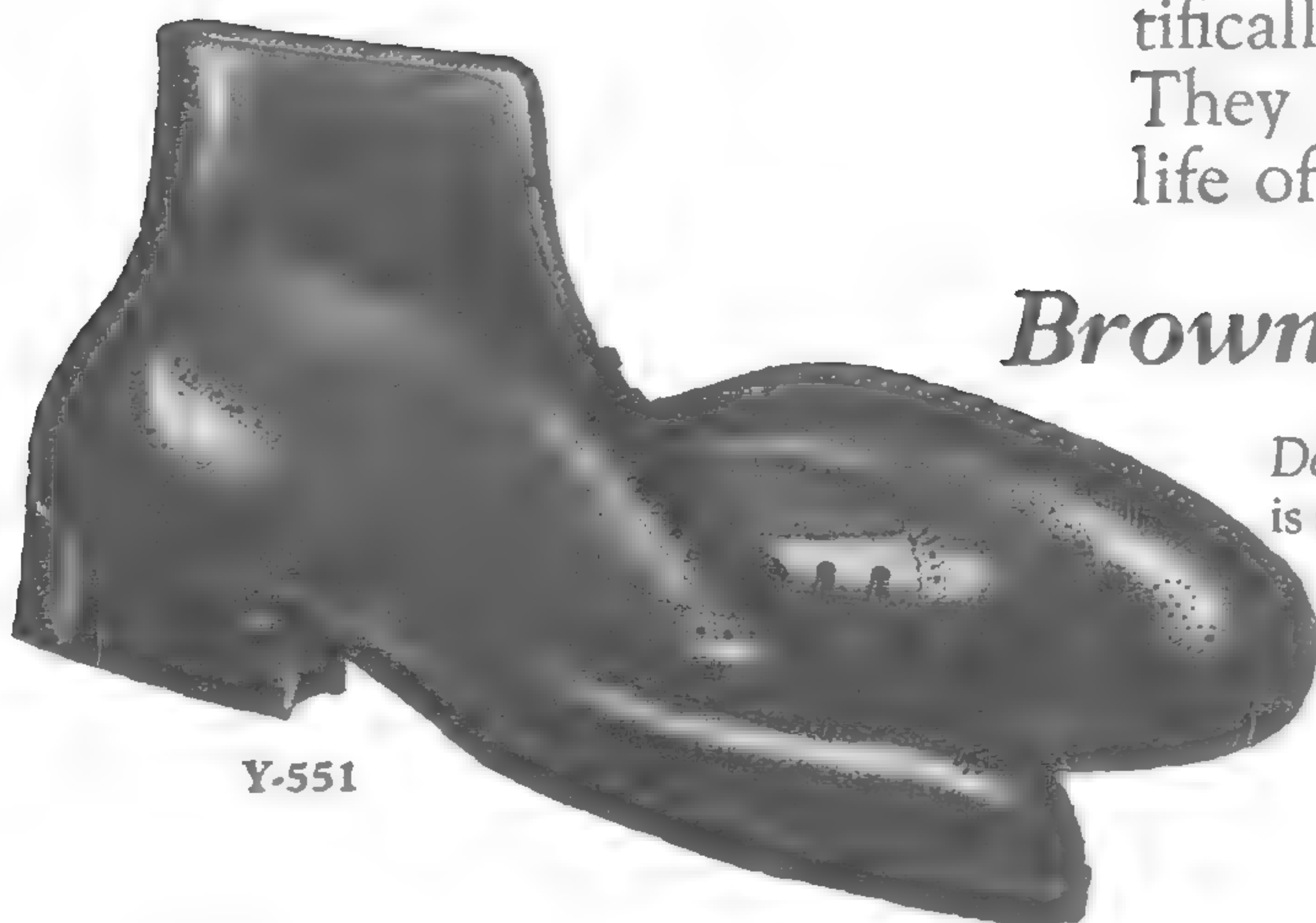
are made by one of the largest boot and shoe manufacturers in the world. Eleven huge factories, with a daily output of thirty-five thousand pairs, are today supplying shoes to all parts of the world.

When you buy a *Brown Shoe*, you may be sure that you have the utmost in quality, material and workmanship.

There is individuality in every *Brown* style—superiority of quality, character and workmanship in every pair.

Brown Shoes are strongly built, and scientifically made to fit the foot correctly. They hold their shape throughout the life of the shoe.

Brown Shoes Are In All Good Stores



Y-551

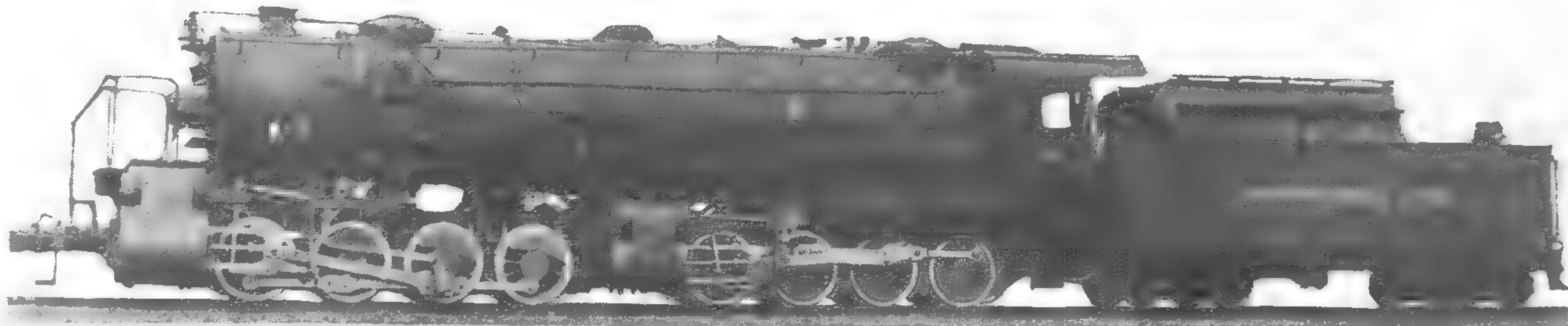
Dealers:—The comprehensive range of *Brown Shoes* is such that your most discriminating customers will find no difficulty in obtaining models correct in style, perfect in fit and adapted to their particular needs. An extensive advertising campaign is establishing a demand for *Brown Shoes* in your territory. Write for descriptive catalogues and price lists.

CHIAM COMMERCIAL COMPANY, SHANGHAI, HONG-KONG, YOKOHAMA, MANILA
HOME OFFICE: SEATTLE, U. S. A.

BROWN SHOE COMPANY, Manufacturers
ST. LOUIS, U. S. A.

Cable Address: "Brownshoe"
Codes: ABC 5th Edition, Lieber's, Bentley's
Western Union Five Letter Edition

MALLET LOCOMOTIVES



MALLET ARTICULATED LOCOMOTIVE FOR THE PENNSYLVANIA LINES

Cylinders—26 and 40"x 28"
Driving-wheels, diam.—51"
Steam pressure—225 pounds.
Grate area—96.3 sq. ft.

Water heating surface—5,030 sq. ft.
Superheating surface—1,406 sq. ft.
Weight, total engine—458,140-lbs.
Tractive force—100,000-lbs.

The majority of Mallet locomotives on American railroads are of large size, and are used in road or pusher service on steep grades. They are also used, to a limited extent, for switching service in "hump" yards. In such a yard the train is pushed up one side of the hump, and the cars roll down by gravity on the other side and are classified, as required, by switching them on different tracks.

The Pennsylvania Lines West of Pittsburgh have recently placed in hump yard and heavy pusher service, ten Baldwin Mallets of the o-8-8-o type, as illustrated above. The maximum grades in the hump yards on the Pennsylvania Lines are of $3\frac{1}{2}$ per cent., but these locomotives are designed for service on grades as steep as 5 per cent. They use superheated steam, are fired with mechanical stokers, and are equipped with power operated reverse gears and grate shakers. Although the total wheel-base of the locomotive is comparatively long, the rigid wheel-base is that of one group of driving-wheels only; and the articulated connection between the front and rear frames is designed to allow relative movement in a vertical as well as a horizontal plane, so that there is no danger of binding at the frame joint when passing over sudden changes in grade.

This is an efficient type of locomotive for the heaviest class of pushing and switching service.

THE BALDWIN LOCOMOTIVE WORKS

Cable Address: "BALDWIN PHILADELPHIA"

PHILADELPHIA, PA., U.S.A.

ANDERSEN, MEYER & Co., Ltd., Agents for China, Hongkong, Philippine Islands, Indo-China, Straits Settlements, and Siam. Head Office: SHANGHAI; Branches: TIENTSIN, PEKING, KALGAN, HARBIN, HANKOW, CANTON, HONGKONG, CHANGSHA, TSINAN, VLADIVOSTOK, URGAL and YUNNANFU.

SALE & FRAZER Ltd., TOKYO, Agents for Japan.



Japan, China,
Philippines, United States
via Honolulu

PACIFIC MAIL STEAMSHIP CO.

Operating the New and Beautiful American Steamers

ECUADOR VENEZUELA COLOMBIA

Built 1915, 14,000 Tons Each

Manned by competent officers who take real pleasure in making your voyage one of comfort and delight. The congenial and harmonious atmosphere found aboard these boats is due to the painstaking efforts of crew and management to please you—to render a service beyond your expectations of what perfect service should be. When you travel aboard these boats, we want you to feel that you own them. Once you travel via the Pacific Mail, the ordinary comforts of steamship travel make no appeal to you.

PORTS OF CALL:

MANILA, HONGKONG, SHANGHAI, KOBE,
YOKOHAMA, HONOLULU, SAN FRANCISCO.

SOME OF THE FEATURES FOR THE SAFETY AND PLEASURE OF PASSENGERS

Wireless Telegraphy—Watertight Bulkheads—Double Bottoms—Bilge Keels—Oil Burners—No smoke or dirt.

Single and Two-Bed Rooms (no uppers)—En Suite and De Luxe Rooms—Large Clothes Locker in each Room—Two Washstands in each Room.

Electric Fan in each Room—Electric Reading Light for each bed.

Spacious Decks—Games and Amusements—Salt Water Swimming Tank—Filipino Band of Stringed Instruments—Concerts Afternoon and Evening.

Commodious Smoking Room—Verandah Cafe.

AGENTS IN THE ORIENT

HONGKONG—J. O. Sheppard, Acting Agent

SHANGHAI—B. C. Haile, Agent

MANILA

R. C. Morton, Gen'l Agent

YOKOHAMA—W. W. Campbell, Gen'l Agent

KOBE—S. F. Jones, Agent

J. H. ROSSETER, Vice-Pres. and Gen'l Mgr.—W. A. YOUNG, Jr., Gen'l Passenger Agent

San Francisco, Cal. 508 California St.

NIPPON YUSEN KAISHA

HEAD OFFICE: TOKYO



Freight and Passenger Services to the Principal Ports of both Hemispheres,
with over 100 steamers aggregating 500,000 tons gross

SHANGHAI BRANCH:

3 NORTH YANGTSE ROAD

Branches and Agencies in the Principal Ports throughout the World.

The Shanghai Dock and Engineering Co., Ltd.

Established 1862

(LATE S. G. FARNHAM, BOYD & CO., LTD.)

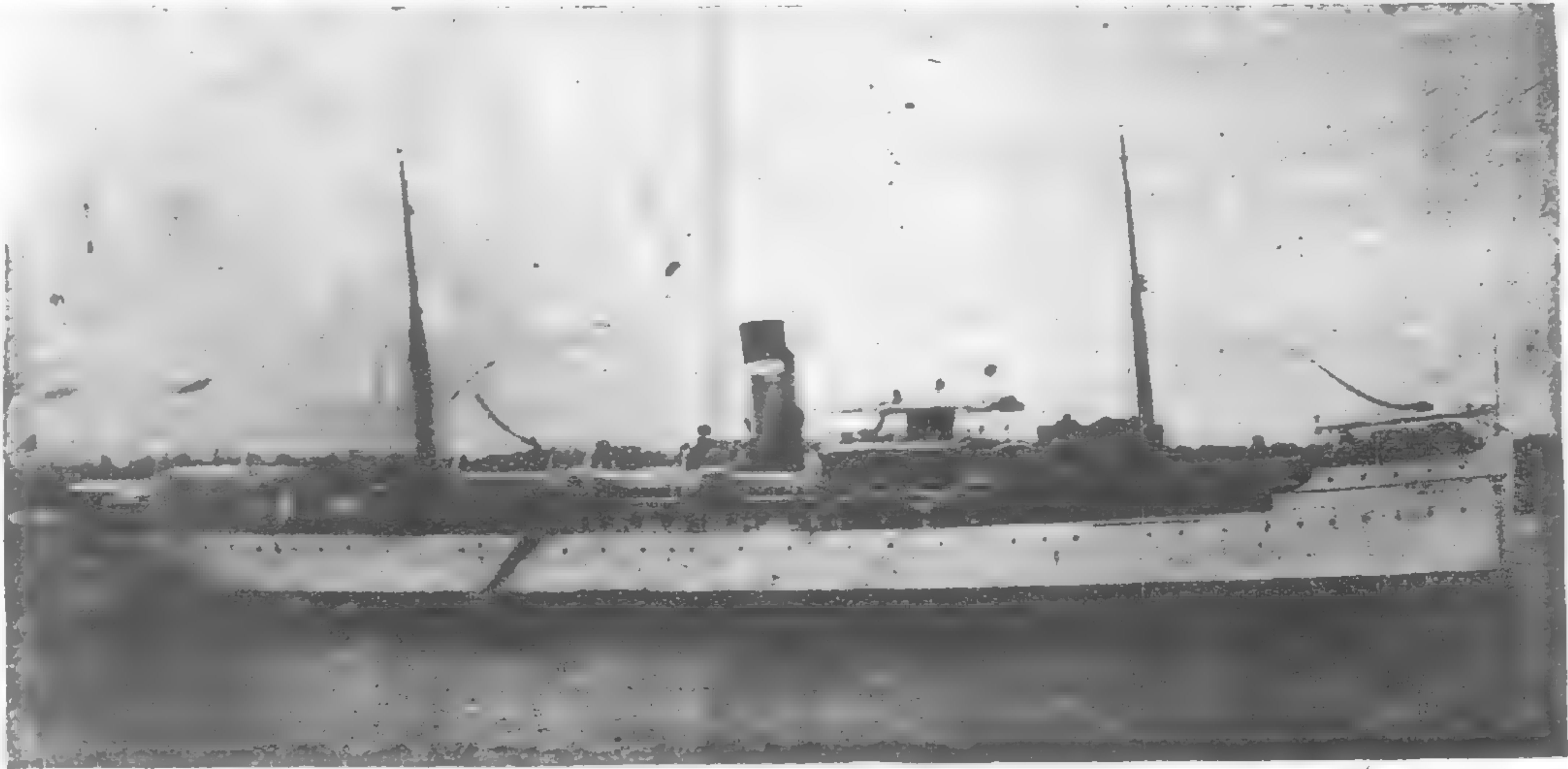
Boilermakers, Dock Proprietors, Shipbuilders, Engineers and Electricians

HEAD OFFICE:

26 Broadway,

Shanghai

Telephone No. 7



U.S. ARMY TRANSPORT "MERRITT," 300' 0" X 45' 0" X 28' 3"

Cable Address

"FARNHAM"

Codes Used,

A.B.C. 4th & 5th

Editions

A-1, Watkin's,

Scott's,

Western Union,

Bentley's

and

Engineering.

The "Merritt" is one of Twenty-Seven Steam Vessels built during the last few years to the order of The American Government for service in the Philippine Islands.

The Docks are five in number, ranging in length from 355 feet to 532 feet on the Blocks, and breadth of entrance from 53 feet to 77 feet, with a depth of water on the sill of from 16 feet to 24 feet.

The Dock charges are the most moderate in the Far East.

The Company's Yards and Docks cover 96 acres. The Water Frontage is about 1½ miles in length. Wharves and Pontoons are arranged where steamers can moor during repairs; and slips for hauling up small vessels are provided. Sheer legs capable of lifting 65 tons are placed at the various Docks.

The extensive Shipbuilding yards and workshops, lit by Electric Light, are provided with the latest improvements, such as travelling cranes of 60 tons' capacity, hydraulic and pneumatic machinery and tools.

Light railway lines are laid throughout workshops and yards.

A Staff of Divers, and powerful salvage appliances, and Floating Cranes ready for any emergency at short notice. Enquiries immediately attended to.

Estimates given for all classes of work; Coast Steamers, Side and Stern Wheelers, Tugboats, Launches, Steam Barges, Dredgers, Floating Cranes, and Lighters a speciality.

Every description of repairs and renewal work undertaken and expeditiously executed.

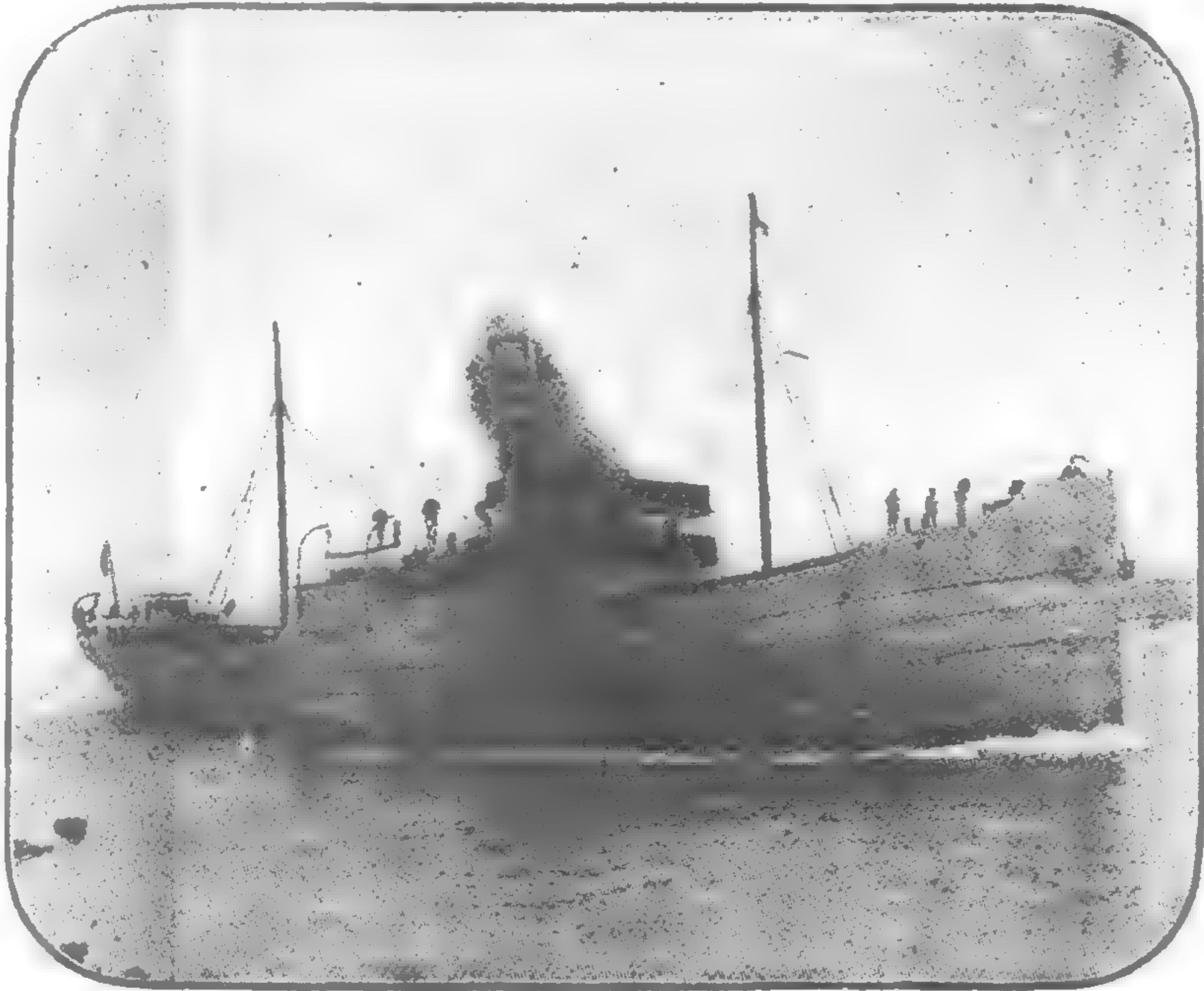
Motor, Land and Marine Engines and Boilers, Centrifugal, Mining, and other pumping machinery always in stock or in progress, also power driven Machine Tools. Engineer's Hand Tools, Steam, Gas, Oil, and Electric machinery and Engineering accessories generally.

Low Pressure Hot Water and Steam Heating Installations

PARTICULARS OF DRY DOCKS

Names	Length on Blocks	High Water	
		Breadth of Entrance	Depth of water on Sill
Cosmopolitan Dock ...	532 feet	77 feet	24 feet
International Dock ...	528 "	77 "	23 "
New Dock ...	450 "	74 "	21 "
Old Dock ...	399 "	53 "	16 "
Tunkadoo Dock ...	350 "	67 "	16 "

Berths for Building Steamers up to 10,000 tons
Deadweight Capacity.



One of Six Steel Cargo Steamers presently under construction.

ENQUIRIES SOLICITED

L. B. Holliday & Co., Ltd.

HUDDERSFIELD ENGLAND

Telephone :
334 Huddersfield (4 lines)
Telegrams :
"Dyewares, Huddersfield"



Codes Used :
Western Union
Lieber's
ABC 4th & 5th Edition

MANUFACTURERS OF COAL-TAR DYESTUFFS, INTERMEDIATE PRODUCTS, DRUGS, &c.

Acid Colours
Basic Colours
Mordant Colours
Direct Colours
Vat Colours
Sulphur Colours

Paranitrotoluol
Diphenylamine
Anthraquinone
Benzidine
Tolidine
Salicylic Acid

Acetyl Salicylic Acid
Sodium Salicylate
Phenacetin
Tartrazine
Methylene Blue
(Medicinal)

ORTHONITROTOLUOL. Distilling Range $1\frac{1}{2}^{\circ}\text{C}$.

SPECIALLY PURE.

ORTHOTOLUIDINE PARATOLUIDINE

Agents :

CANADA.—The John Cowan Co., 9 Dalhousie Street, Montreal.

U.S.A.—The Standard Colour Co., Boston.

JAVA & DUTCH EAST INDIES.—Bart Myrtle & Co., Batavia.

DENMARK, NORWAY, SWEDEN & ICELAND.—Evans Sons Lescher & Webb, Hanover St., Liverpool.

SOUTH AMERICA.

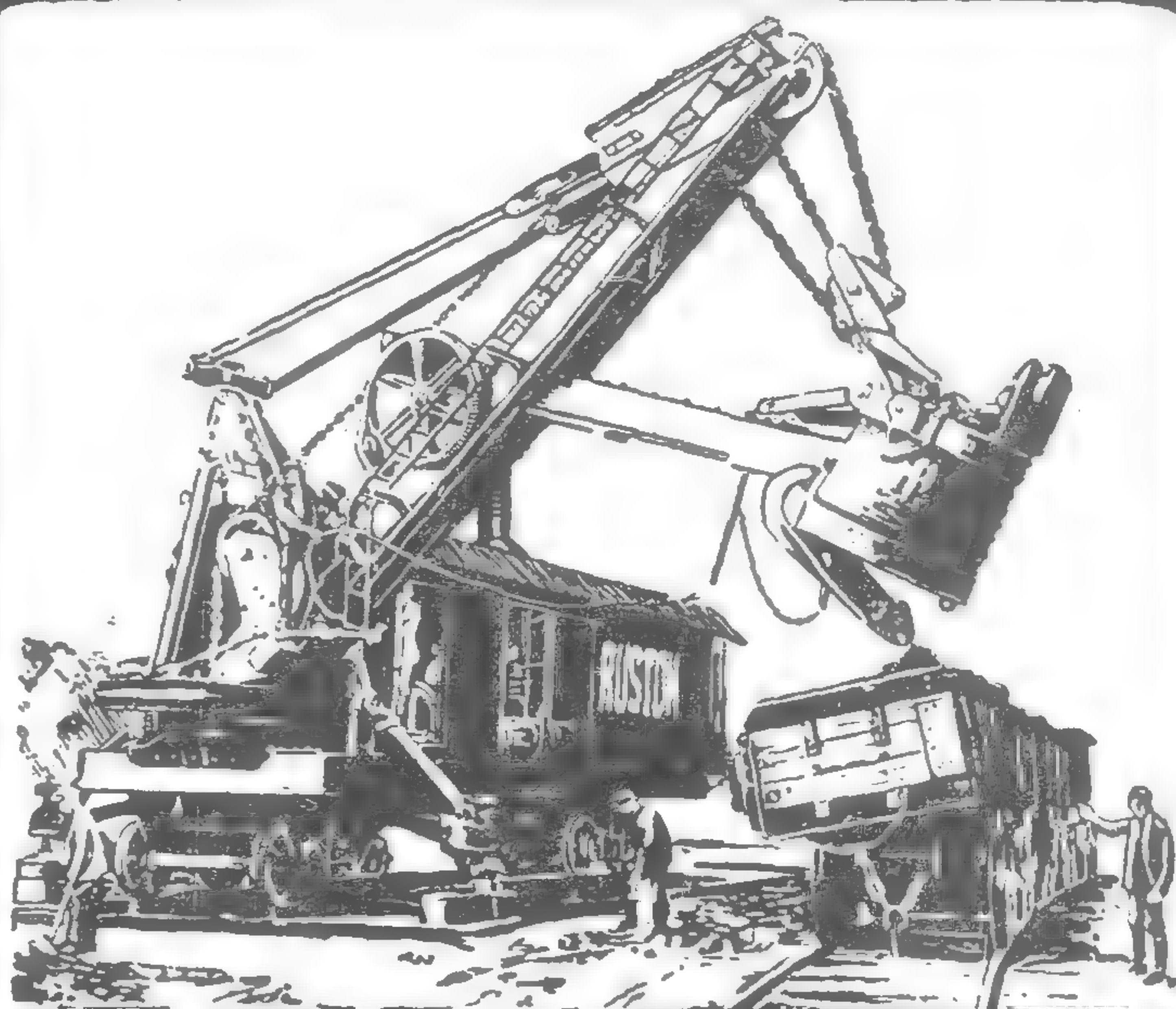
ITALY.—Rag. W. Tanzi, Via B. Eustachi 45, Milan.

GREECE.—Balkan Trading Co., Athens.

BURMA.—Bullock Bros., Rangoon, Akyat, Bassein and Maulmain.

NORTH CAROLINA.—The Mackenworth Co., Greensboro', North Carolina.

AUSTRALIA.—James Dyer, Thuders Lane, Melbourne.



The RUSTON STEAM EXCAVATORS

Practically the whole of the great Public Works in Great Britain where excavation work was involved has been done with the assistance of Ruston Excavators. They have been largely and successfully employed on irrigation works in India, Australia, South America and in general contract and excavation work all over the World. Write on business paper, mentioning FAR EASTERN REVIEW, for our 108 page Illustrated Booklet, "Practical Excavating."

RUSTON & HORNSBY LTD.
ENGINEERS, LINCOLN, ENGLAND

A. & W. NESBITT, LIMITED

Fur, Hide, Skin and General Produce Brokers

THE MOST IMPORTANT BROKERS FOR FUR SKINS IN THE WORLD

Consignments solicited for Sale at Public Auction
four times a year and by Private Treaty Daily.

FUR SKINS
OX AND COW HIDES
GOAT SKINS
SHEEP SKINS
CALF SKINS
HORSE AND COW HAIR
WOOL

CAMELS' HAIR
GOAT HAIR
BRISTLES
TOBACCO
DRUGS
FEATHERS

We execute orders in London and America for all kinds of
British, Colonial and Foreign Produce for export abroad.

Agents for America and Canada :
N. F. MONJO & CO.
220 Fifth Avenue, NEW YORK

Agent for Russia and Far East :
S. HOPFENKOPF
Milpituisky Pereulok 3, Ap. 6, Moscow

A. & W. NESBITT, LIMITED

Warehouse and Offices:

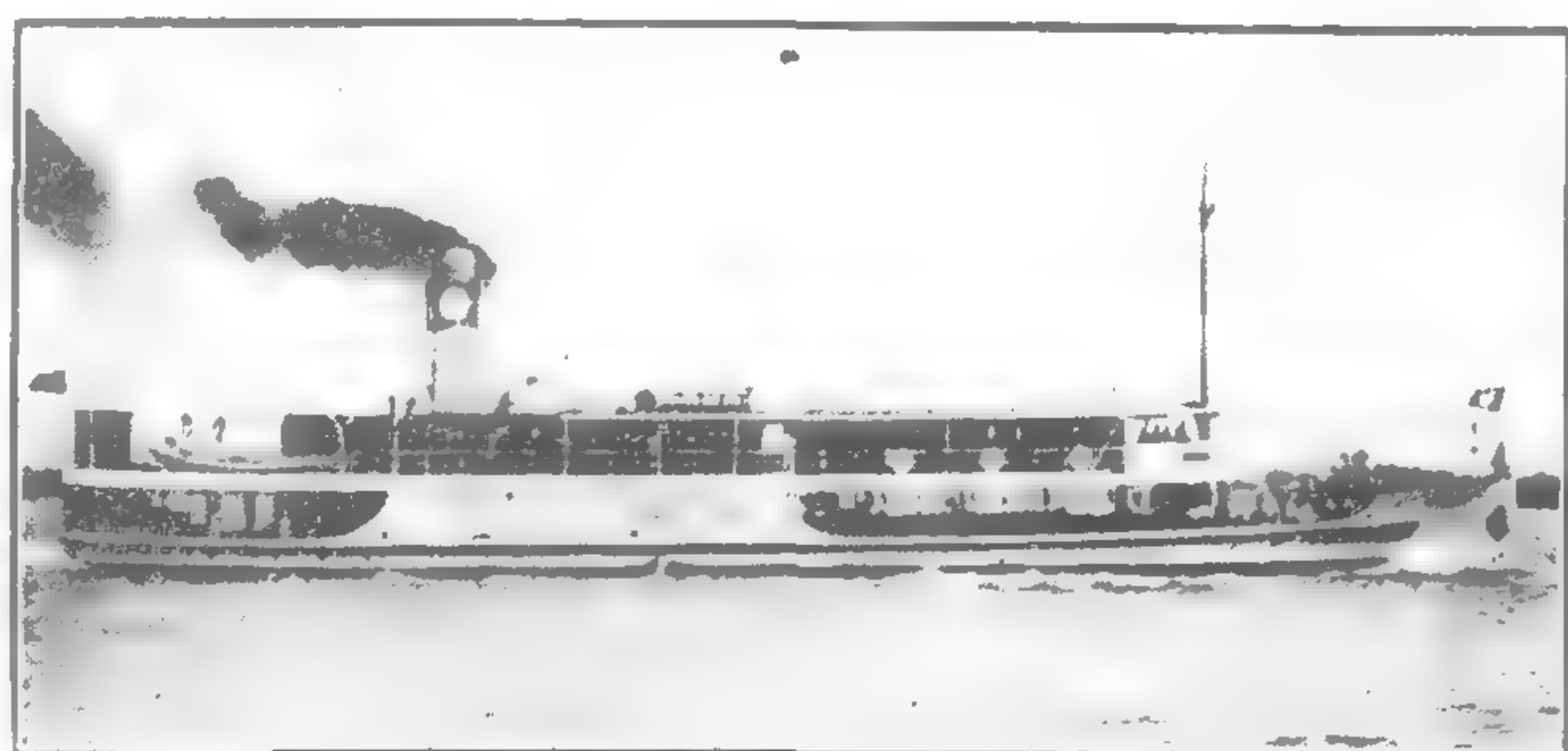
5-10 GARLICK HILL, CANNON STREET, LONDON

Cable Address: "TIBSEN, LONDON." All Codes used.

所船造南江海上 THE KIANGNAN DOCK ENGINEERING WORKS

SHANGHAI

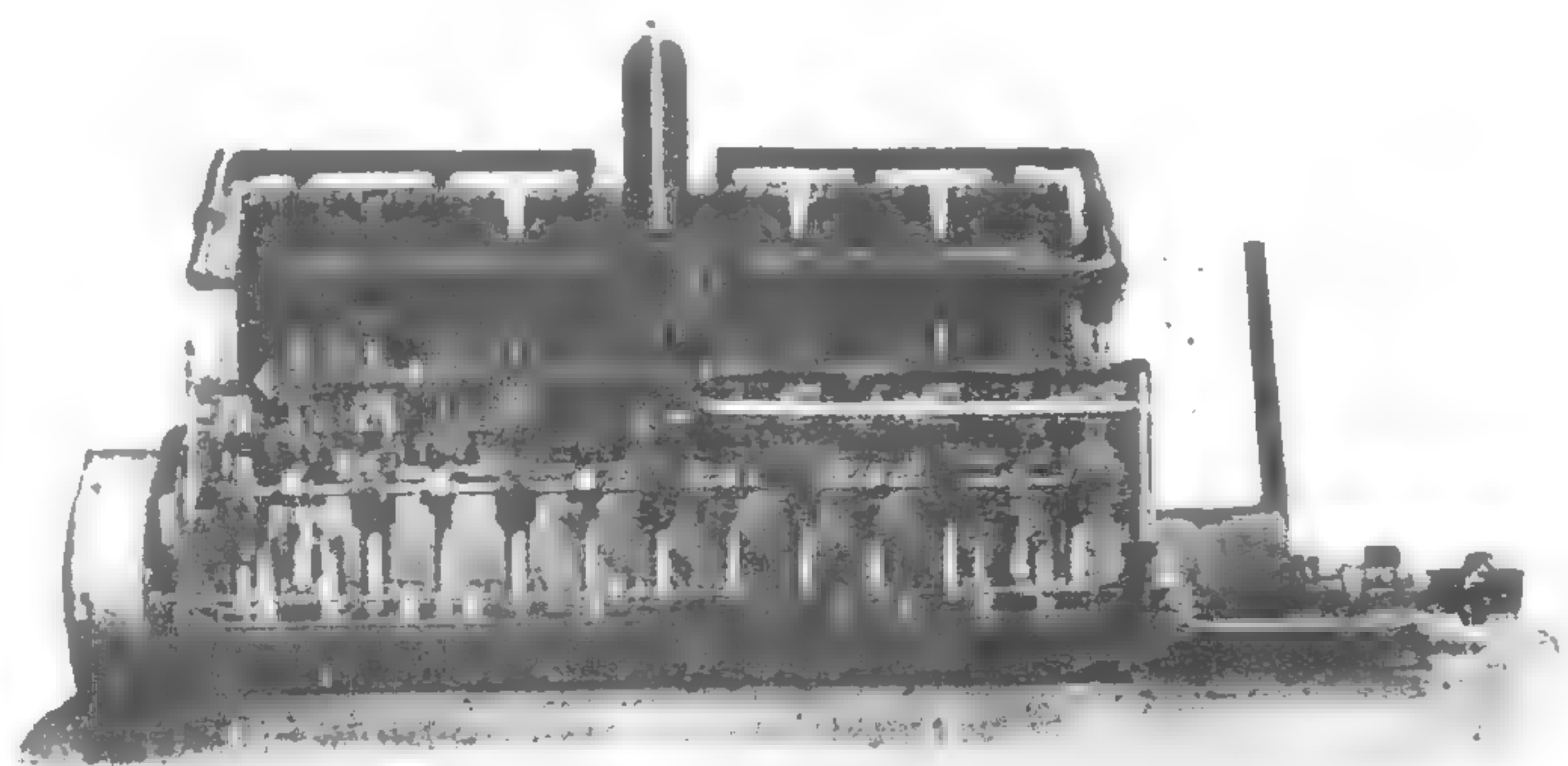
Dockowners, Shipbuilders, Engineers &
Boilermakers



A.P.C. Oil Tanker *An Lun* on the Chungking Service

KIANGNAN DOCK IS A THOROUGHLY MODERN SHIPBUILDING PLANT, RECENTLY IMPROVED AND EXTENDED WITH LATEST MACHINERY FOR BUILDING VESSELS FROM LAUNCHES TO STEAMERS OF 10,000 TONS DEADWEIGHT.

EXTENSIVE WHARVES AND GOOD DOCKING FACILITIES TO INSURE QUICK REPAIRS TO SHIPS



100 H.P. Six Cylinders Gorham Gas Engines

Kiangnan Dock are Sole Manufacturers under patent rights of this Type of Marine and Stationary Motors in the following sizes: 5 H.P., 10 H.P., 15 H.P., 20 H.P., 35 H.P., 50 H.P., 75 H.P., 100 H.P. and larger sizes up to 500 H.P.

Directors :

K. N. LEW

KWONG KWOH WAH

Superintendent Engineer :

R. B. MAUCHAN

Cable Address :

"Sinndock"

Codes :

A.B.C. 5th Edition,
Engineering,
Lieber's, Standard

Cable Address :
"LONDONIA"
NEW YORK

Codes : A. B. C. 5TH EDITION
LIEBER'S, WESTERN UNION
BENTLEY'S, ETC.

London & Lancashire Trading Co., Ltd.

PARK ROW BUILDING
NEW YORK, U.S.A.

Department No. 1:

HARDWARE

Department No. 2:

CHEMICALS

Department No. 3:

PAPER

Department No. 4:

GLASS

Department No. 5:

LEATHER

Department No. 6:

FOOD STUFFS

Department No. 7:

TEXTILES

Department No. 8:

ELECTRICAL SUPPLIES

Department No. 9:

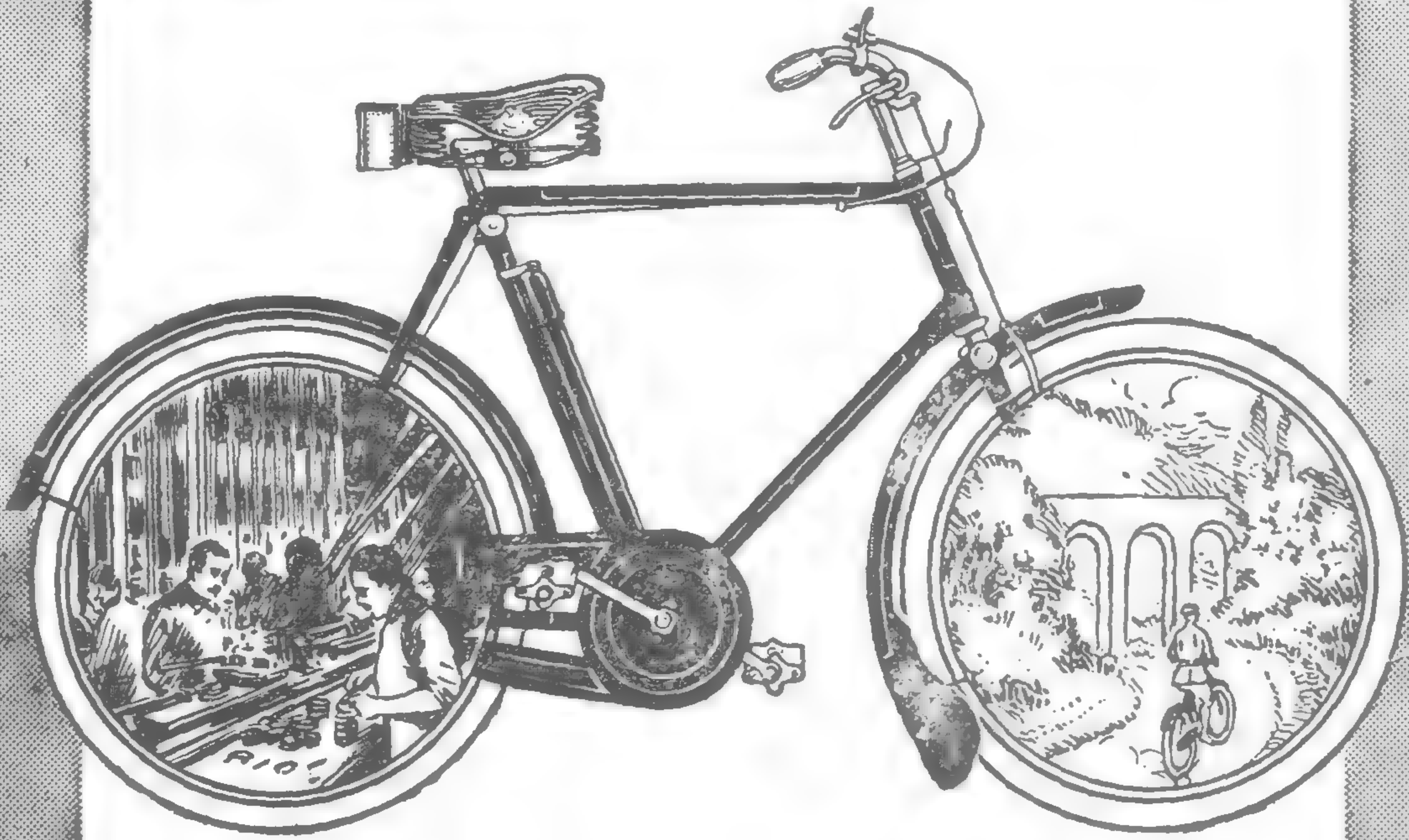
GENERAL MERCHANDISE

EXPORTERS

from

United States and Europe

Inquiries and Orders Solicited



To the dealer who talks "quality" and the cyclist who appreciates it, no machine in the world makes a greater appeal than the

RALEIGH

THE ALL-STEEL BICYCLE

with Dunlop Tyres and Sturmey-Archer 3 speed gear. The Cycle that is built with accuracy from steel of proved excellence, though reasonably light in weight, has exceptional strength.

The Raleigh cycle is as satisfactory to sell as it is to ride.

This season is a Raleigh season. We are open to appoint selling agents now in countries where not yet represented.

Send a post card for "The Book of the Raleigh" and shipping terms.

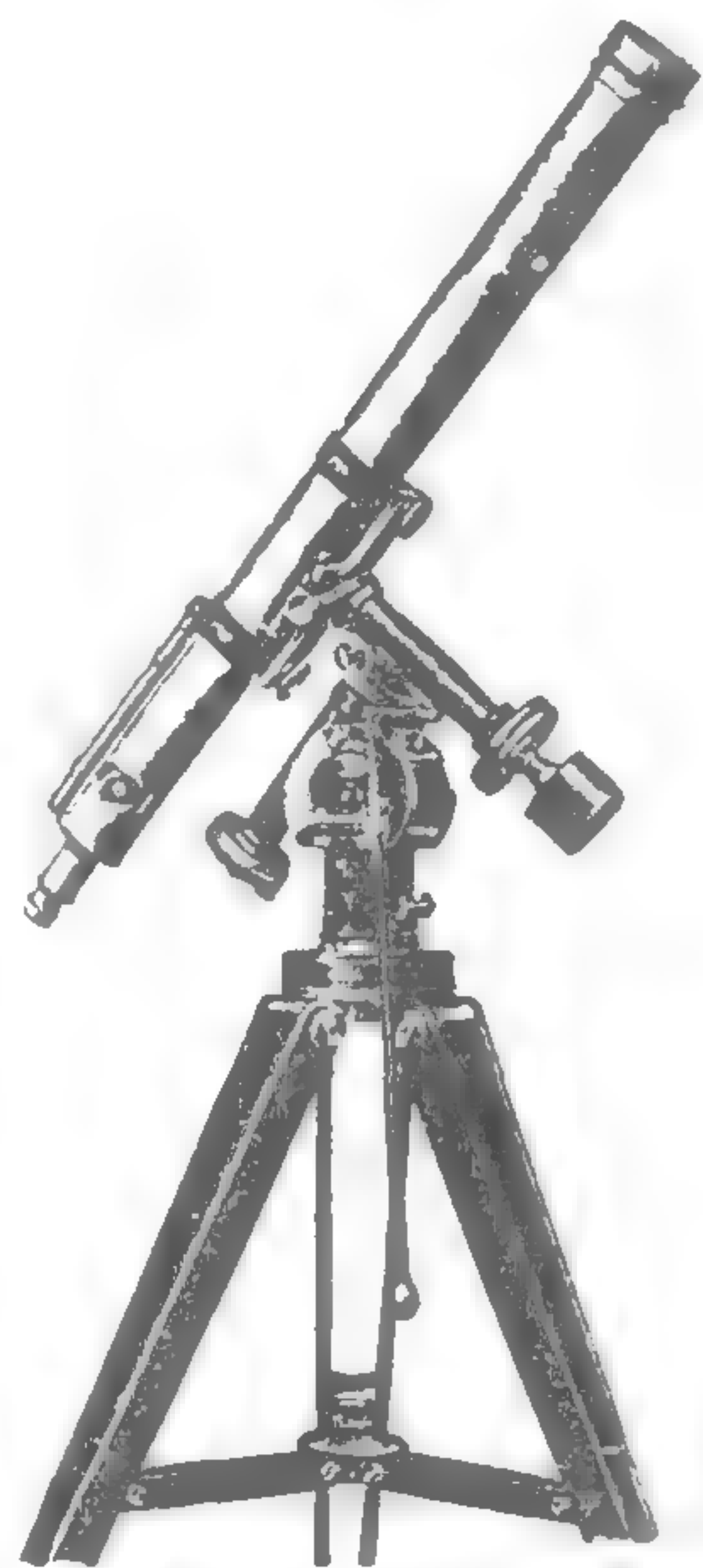
Envoyez une carte postale pour "The Book of the Raleigh" et conditions pour l'exportation.

Envia una carta postale por "The Book of the Raleigh" y condiciones de venta para la exportation

RALEIGH CYCLE CO., LTD.
NOTTINGHAM, ENGLAND.

London Office & Showrooms: 41 Holborn Viaduct, E.C.1

NEGRETTI & ZAMBRA'S



Negretti & Zambra have specialized in the manufacture of Scientific Instruments for the last 60 years.

Enquiries solicited for Surveying, Optical and Meteorological Instruments.

Specify instruments "by Negretti & Zambra" in your indents.

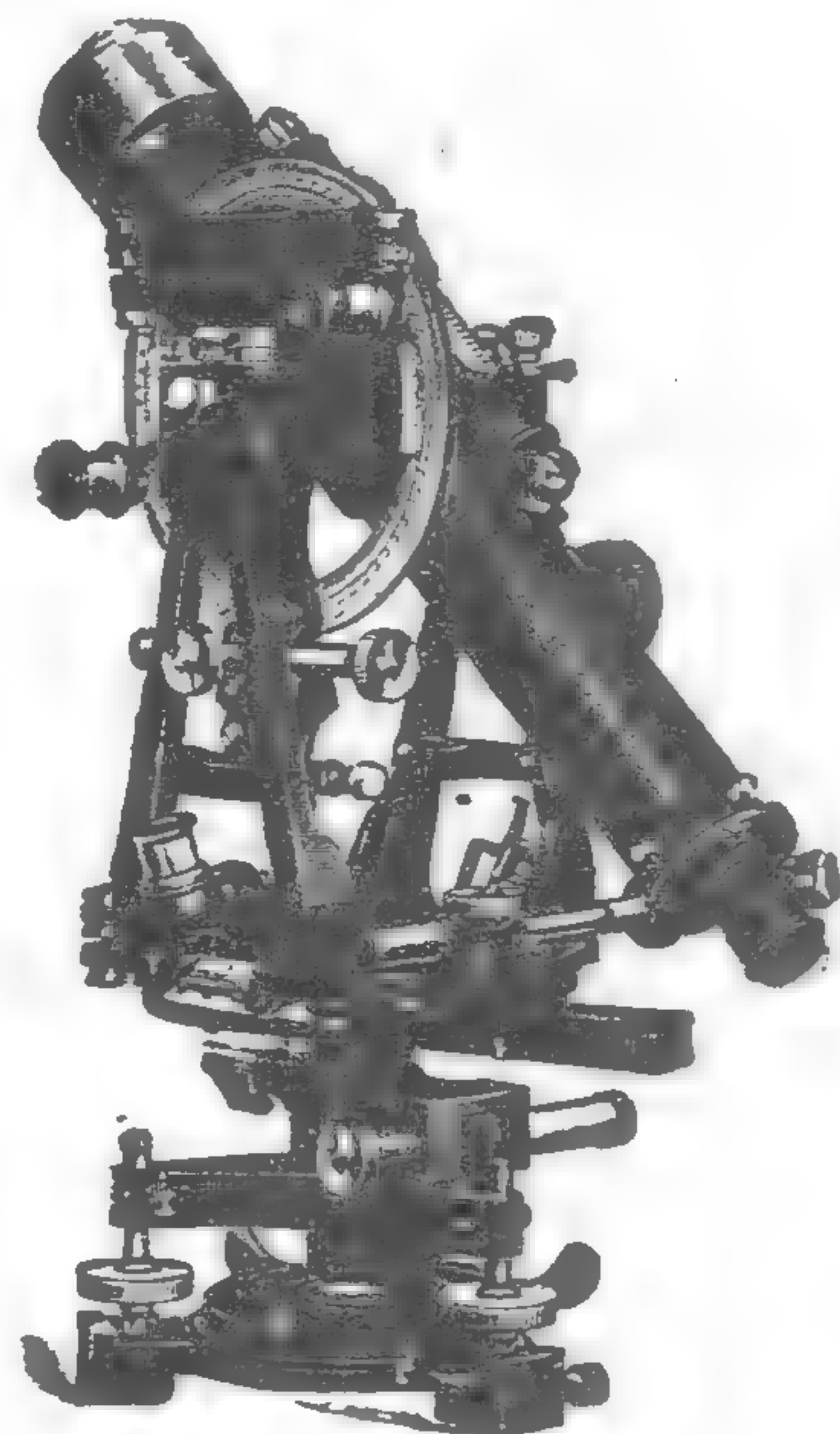
Suppliers to British Dominion and Foreign Governments.
Any illustrated price lists forwarded on request.

Agents for China:

HIRSBRUNNER & CO., SHANGHAI

NEGRETTI & ZAMBRA

38 Holborn Viaduct,
London, E. C. 1.



SCIENTIFIC INSTRUMENTS

CHEMICALS & DYES

Chemicals :—

Caustic Soda, Soda Ash, Soda Crystals, Naphthalenes, Pitch, Tar, and other Coal Tar Products; all Heavy Chemicals and Aspirin, Salicylates, Veronal, Antipyrin, Morphia, Bismuths, Mercurials, etc.

Dyes :—

Direct and Acid Dyes for Cotton, Wool and Silk; Pure Dyes for Foods; Dyes for Soaps; Sulphur Colors and other Dyes for all purposes.

☞ Quotations c.i.f.; Samples on request; We invite enquiries which shall have our best attention.

HARTLEY FLOREY,
45 GREAT TOWER STREET,
LONDON, E.C. 3.

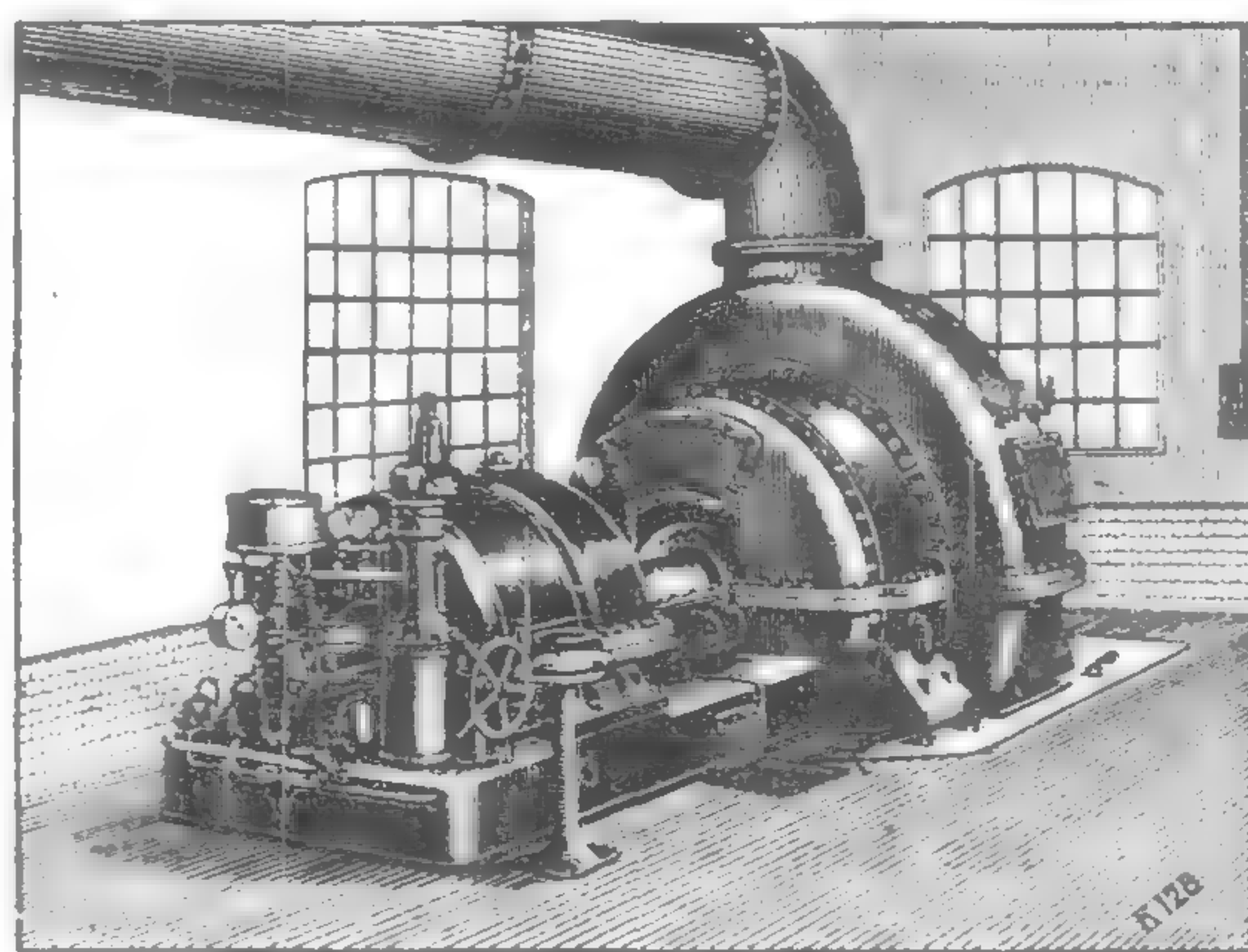
Phone : AVENUE 3889. Telegrams : "YEROLFTRAH, PHONE, LONDON." Codes : A.B.C. & Western Union.

ESCHER WYSS & CO., S.A.

LONDON—Office: 109 Victoria Street, Westminster, S.W.

TOKYO—Office: 6 Uchisaiwaicho Itchome Kojimachi-Ku.

MONTREAL—Office: 626 Coristine Building.



Francis & Impulse
Water-Turbines

TURBO-PUMPS

Zoelly
Steam-Turbines

TURBO-BLOWERS

MITSUI BUSSAN KAISHA, LIMITED

MITSUI & Co., Ltd. (In Europe and America.)

IMPORTERS
AND
EXPORTERS

TRADE



MARK

Capital . Y. 100,000,000

Reserve Fund . 10,400,000

Head Office: 1 SURUGA-CHO, TOKYO.

BRANCHES:

London, Marseilles, Lyon, New York, San Francisco, Portland, Seattle, Dallas, Vancouver, Buenos Aires, Manila, Bombay, Calcutta, Singapore, Bangkok, Rangoon, Soerabaya, Batavia, Semarang, Sydney, Hongkong, Canton, Amoy, Foochow, Shanghai, Chefoo, Hankow, Changsha, Newchwang, Tientsin, Peking, Tsingtau, Dairen, Antunghsien, Mukden, Tieling, Chungchun, Petrograd, Vladivostok, Harbin, Seoul, Chemulpo, Fusan, Yokohama, Nagoya, Osaka, Kobe, Muroran, Niigata, Moji, Wakamatsu, Kuchinotsu, Nagasaki, Karatsu, Miike, Otaru, Taipeh, Keelung, Tainan, Takow, etc., etc.

THE MITSUI BANK, LIMITED

Paid-Up Capital Y. 20,000,000.00

Reserve Fund 12,550,000.00

Head Office: No. 1 SURUGA-CHO, NIHONBASHI-KU, TOKYO.

BRANCHES:

FUKAGAWA (Tokyo), FUKUOKA, HIROSHIMA, KOBE, KYOTO, MOJI, NAGASAKI, NAGOYA, NISHI (Osaka), OSAKA, OTARU, SHANGHAI, SHIMONOSEKI, YOKOHAMA.

FOREIGN AGENTS: London Barclays Bank, Ltd. ; The London City & Midland Bank, Ltd.
New York Bankers' Trust Co. of New York ; The Guaranty Trust Co. of New York ; The National Bank of Commerce in New York ; The National City Bank of New York.
Paris Banque de l'Union Parisienne, Comptoir National d'Escompte de Paris.

MITSUI MINING COMPANY, LIMITED

Capital Y. 20,000,000 (Paid up).

Head Office: NIHONBASHI, TOKYO.

The Largest Coal-Mining Establishment in the Far East, Annual Output of the Company's Collieries being equal to a Quarter of the Total Coal Output in Japan.

Other Products

Gold, Silver, Lead, Spelter, Iron Ore, Sulphur, Coke. Chemicals, Medicines, and Dyestuffs of Every Description.

Sole Agents for the Company's Coal and Other Products:

MITSUI BUSSAN KAISHA, LTD.
(Mitsui & Co., Ltd.)

Shanghai, Hankow, Dairen, Hongkong, Tokyo, London, New York, and Other Leading Commercial Centres of the World.

ARNHOLD BROTHERS & CO., LTD.

ENGINEERS AND CONTRACTORS

Representing

The Associated Brass and Copper Manufacturers of Great Britain, Ltd.

SOLE AGENTS FOR—

Asa Lees & Co., Ltd., Oldham:

Cotton Spinning Machinery.

Blackman Export Co., London:

*Keith Lights, Gas Specialities, Fans for
Ships, Mines, Factories, etc.*

Chas. Cain, Son & Greenwood, Halifax:

Card Clothing.

Geo. Keighley, Ltd., Burnley:

Weaving Machinery.

General Fireproofing Co., Youngstown, Ohio
U.S.A.:

Concrete Reinforcement.

American Machine & Foundry Co., Brooklyn:

Tobacco and Cigarette Making Machinery.

William Morris, Ruskin House, London:

Art Metal, Steel Casements, etc.

John Tullis & Sons, Ltd., Glasgow:

Leather Belting, etc.

The Cambridge Scientific Instrument Co., Ltd.,
Cambridge, England:

*Oscillographs, Pyrometers, Thermostats,
Carbon-dioxide Recorders, etc.*

Sprout Waldron & Co., Munsey, Pa., U.S.A.:

Flour and Rice Milling Machinery

Gandy Belting Co., Baltimore, U.S.A.:

"Oxylo" Canvas Belting

A large Staff of Qualified Engineers at the disposal of Clients

HEAD OFFICE: SHANGHAI

**BRANCHES AT CANTON, CHUNGKING, CHINKIANG, HANKOW,
HONGKONG, TIENTSIN, ETC.**

EXPLOSIVES

Nobel's Explosives
Company Limited, Glasgow

Blasting Explosives
Explosives for Coal Getting



Detonators
Electric Detonators
Safety Fuse

Cordite
Military and
Sporting Ammunition

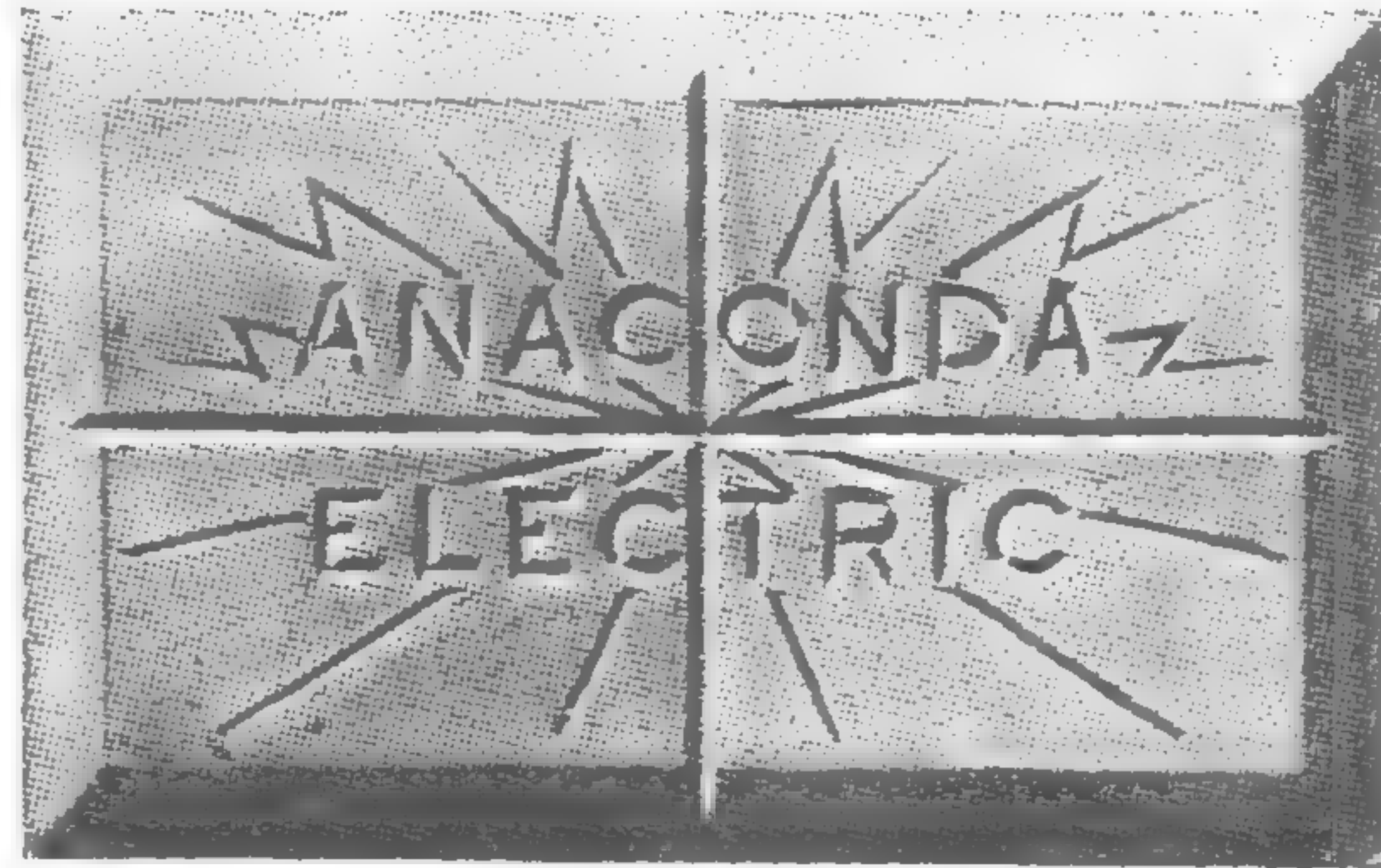
Agents for China.—Messrs. Jardine, Matheson & Co., Ltd., Hongkong,
Shanghai, and Tientsin.

Agents for Japan.—Mitsui Bussan Kaisha, Ltd., Kobe.

Agents for Korea.—Townsend & Co., Chemulpo.

Mitsui Bussan Kaisha, Ltd., Seoul.

NOBEL—GLASGOW



ANACONDA ELECTROLYTIC ZINC

(Zinc 99.9% Pure)

Produced at the refineries of the Anaconda Copper Mining Company at Great Falls and Anaconda, Montana.

ELECTROLYTIC COPPER N E C & B M BRANDS

BEST SELECTED COPPER A B S & M A BRANDS

PIG LEAD—DESILVERIZED COMMON—INTERNATIONAL (I. L. R. CO.)

Sales Agent:

UNITED METALS SELLING CO.

42 BROADWAY, NEW YORK, N.Y.,

U.S.A.

A.B.C. CODE USED. CABLE ADDRESS "TELRAMUND" N.Y.



Remington UMC

Shotgun Cartridges

THESE are an outgrowth of years of experience in the manufacture of factory-loaded shotgun cartridges. They are a development embodying the accumulated knowledge of many people and many years. They are accurately and uniformly loaded by the finest automatic machinery (much of which has been developed in our own Works), operating to a degree of accuracy and uniformity that is unattainable in hand-loaded products or by any equipment less perfect or less closely supervised than ours. We believe our equipment and our product to be unexcelled anywhere. All our cartridges are carefully tested and inspected at each stage of manufacture.

Experience has taught us and the public also, that a waterproofed case is desirable for many reasons. We, therefore, waterproof all Remington UMC cartridge cases by our own patented "wetproof" process. This process not only waterproofs the case itself, but effectually seals it against moisture so that these cartridges are guaranteed to be impervious to the deteriorating effect of moisture, and even actual immersion in water; also against the changing climatic conditions of extreme heat and cold.

These cartridges are marketed under four standard brands, namely: "New Club", "Remington", "Nitro Club" and "Arrow". They cover the whole range of shotgun cartridges, thus avoiding the confusion and inconvenience in trading which follows the attempt to separate by means of distinctive names and colours similar cartridges of slightly different loads.

In these standard loads, Remington UMC Shotgun Cartridges may be obtained promptly with full assurance of their uniformity and regularity. Loads other than "Standard" may be obtained within the limits of safety.



THE REMINGTON ARMS UMC CO., Inc.
233 BROADWAY NEW YORK CITY

Representatives for North China, Manchuria and Korea (Chosen)

Sale & Frazar, Ltd., Vladivostok, Harbin and Keijo

E. W. Frazar & Co., Peking and Tientsin

Cornabe, Eckford & Co., Darien and Tsingtau

Catalogues, prices and all information may be obtained from any of the above offices.

ATTWATER & SONS

CANADIAN AND INDIAN MICA—

CUT, SLAB, and SPLITTINGS (Minimum Stock 200,000 lbs.) DYNAMO TAPES, ASBESTOS TAPES, and HOLLOW BRAIDS. EMPIRE CLOTH and LINO TAPES. PURE COTTON DUCKS and DRILLS. ARMATURE BINDING CORDS and ROPES VULCANISED FIBRE EBONITE, SHEET, RODS and TUBES.

PEERLESS LEATHEROID INSULATION

THE GREATEST INSULATING PAPER MADE

“RESISTIT” (^{SYN.}BAKELITE) PAPER, SHEET, & TUBE

PRESSPAHN AND INSULATING PAPERS

ELECTRICAL PURE RUBBER AND ADHESIVE TAPE

Contractors to the Admiralties and War Office, British, American, French and Italian Governments

Hopwood Street Mills, PRESTON, Eng.

ESTABLISHED
1868

Telegrams: “Attwaters, Preston”

Telephone No.: 1045 (2 lines)

Codes: 5th Edition A.B.C., and Western Union

CHINESE-AMERICAN COMPANY

EXPORTERS - - IMPORTERS - - CONTRACTORS

Cable Address: CHIAM. All codes

BOSTON

Weld Building

NEW YORK

Woolworth Building

SHANGHAI

2a Kiukiang Road

HANKOW

20-22 Vakhovitch

PEKING

Fong Tchar Yuan

KOBE

36 Nichi Machi

Chartered Bank of India, Australia and China

38 BISHOPSGATE, LONDON

INCORPORATED BY ROYAL CHARTER.

Capital	.	.	.	.	.	.	£2,000,000
Reserve	.	.	.	.	.	.	£2,000,000
Reserve liability of Shareholders	.	.	.	.	.	.	£2,000,000

Court of Directors:

SIR MONTAGU CORNISH TURNER, *Chairman*.
SIR HENRY STEWART CUNNINGHAM, K.C.I.E.
THOMAS CUTHBERTSON, Esq.
SIR ALFRED DENT, K.C.M.G.

WILLIAM HENRY NEVILLE GOSCHEN, Esq.
THE RIGHT HON. LORD GEORGE HAMILTON, G.C.S.I.
WM. FOOT MITCHELL, Esq.
LEWIS ALEXANDER WALLACE, Esq.

JAMES MAXWELL GRANT PROPHIT.

Joint-Manager—T. H. WHITEHEAD AND T. FRASER

Sub-Manager—W. E. PRESTON.

Agencies and Branches:

Amritsar	Canton	Hankow	Klang	Medan	Rangoon	Sourabaya
Bangkok	Cebu	Hongkong	Kobe	New York	Saigon	Thaiping (F.M.S.)
Batavia	Colombo	Iloilo	Kuala Lumpur	Peking	Seremban	Tientsin
Bombay	Delhi	Ipoh	Madras	Penang	Shanghai	Yokohama
Calcutta	Haiphong	Karachi	Manila	Puket	Singapore	

Bankers:

THE BANK OF ENGLAND.
THE LONDON CITY & MIDLAND BANK, LTD.

THE LONDON COUNTY WESTMINSTER & PARRS BANK, LTD.
THE NATIONAL PROVINCIAL BANK OF ENGLAND, LTD.

THE NATIONAL BANK OF SCOTLAND, LTD.

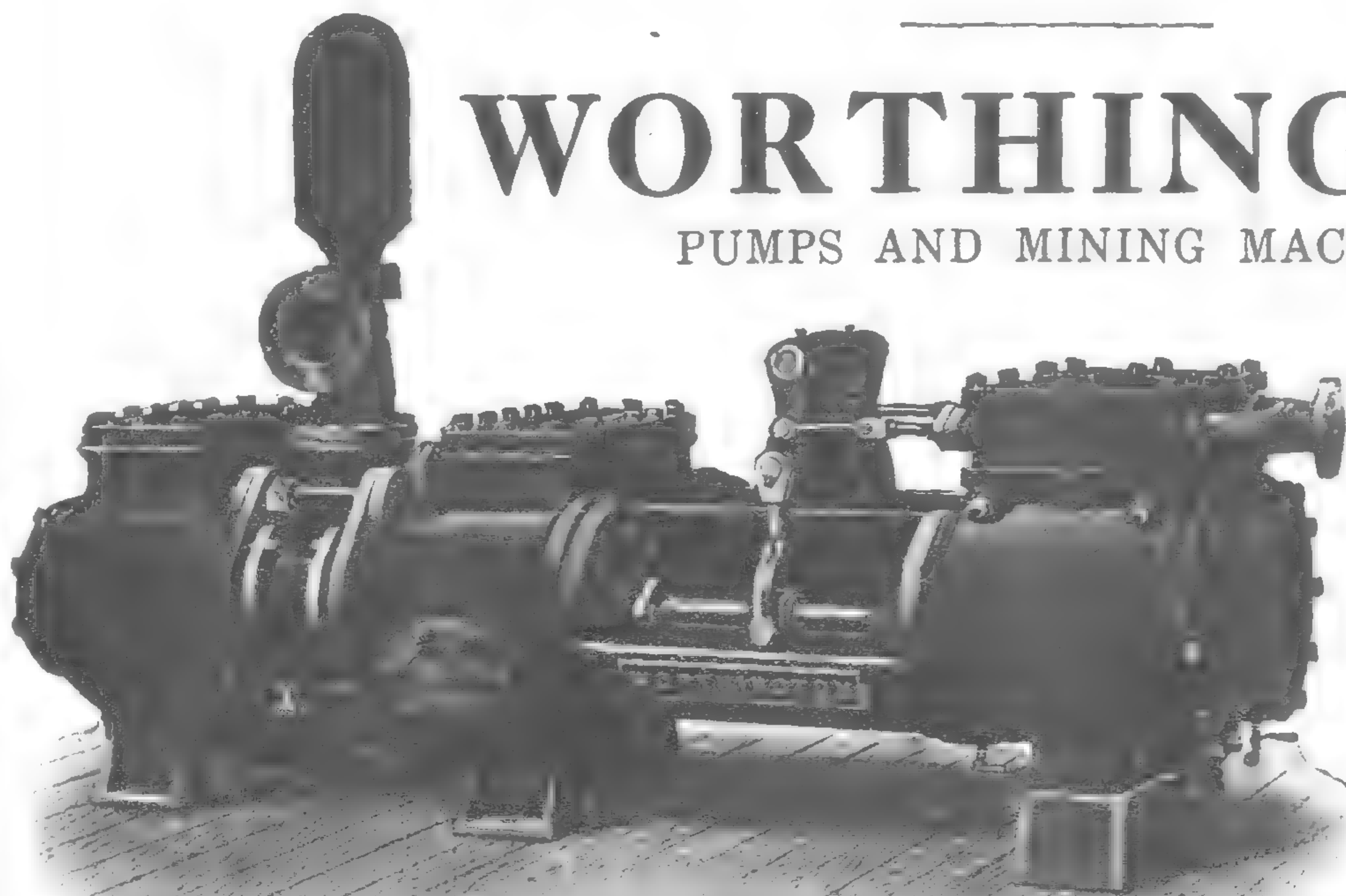
The Corporation buy and receive for collection Bills of Exchange, grant Drafts payable at the above Agencies and Branches, and transact general banking business connected with the East.

Deposits of Money are received for fixed periods on terms which may be ascertained on application; interest payable half-yearly, 30th June and 31st December. On Current Accounts interest is allowed at 2 per cent. per annum on the minimum monthly balances, provided they do not fall below £200.

A Pump for Every Purpose

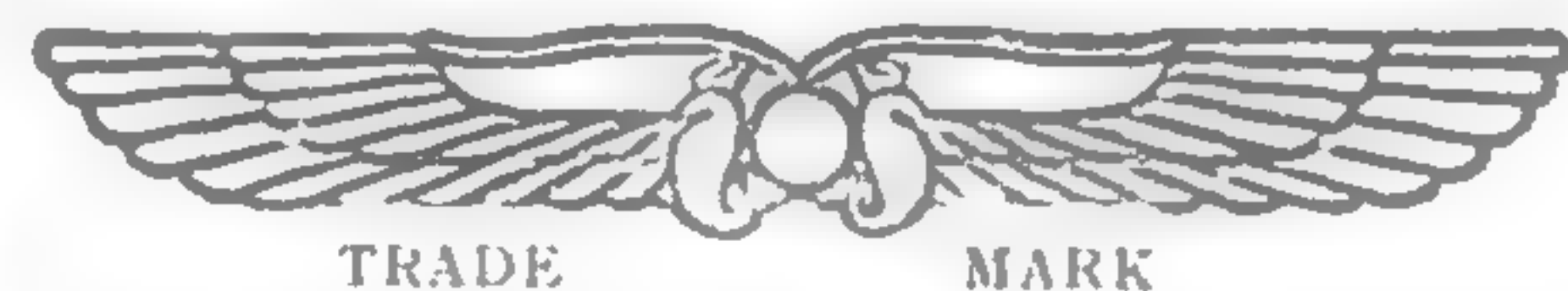
Steam pumps in a variety of designs and patterns that afford a wide range of selection in size and construction.

The numerous problems in mining and construction work are readily solved with a WORTHINGTON.



WORTHINGTON

PUMPS AND MINING MACHINERY



TRADE MARK

ANDERSEN, MEYER & CO., LTD.

Sole Agents in China.

Shanghai

Canton	Peking
Changsha	Tientsin
Hankow	Tsinan
Harbin	Urga
Hongkong	Vladivostok
Kalgan	Yunnanfu



WELL established and widely connected banking correspondents in all the market centers of the Far East provide for Irving customers reliable and responsive sources of information and service facilities for carrying out banking and commercial operations in every country of the Orient.

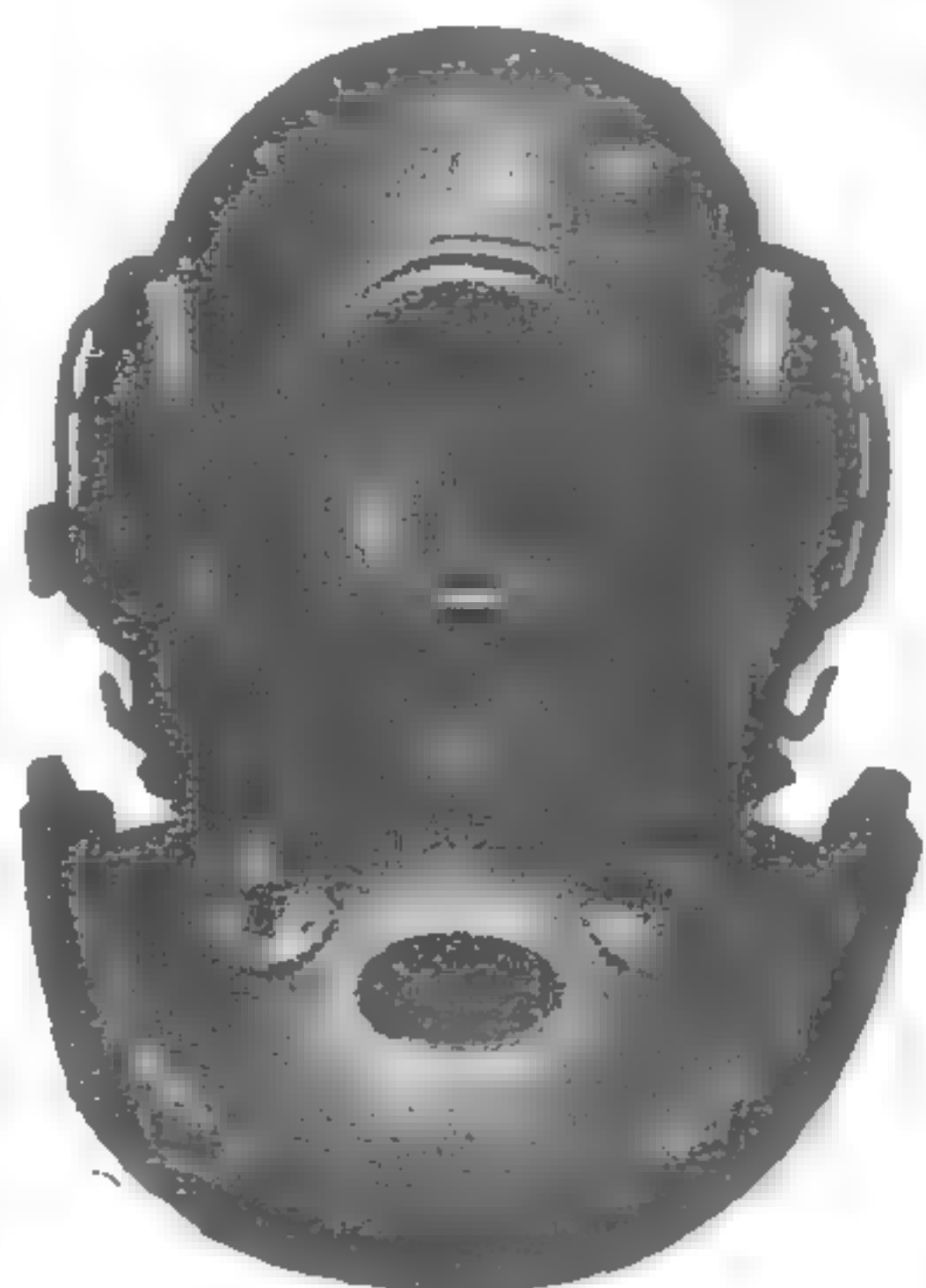
IRVING NATIONAL BANK

WOOLWORTH BUILDING, NEW YORK, U.S.A.

*Commercial Bank
National and Inter-National*

DIVING APPARATUS

And other SUBMARINE APPLIANCES.



Contractors to . . .

BRITISH ADMIRALTY,
WAR OFFICE,
INDIA OFFICE,
TRINITY HOUSE, etc.

Prompt shipment of complete sets
and accessories of every description

ALSO MAKERS OF

SMOKE HELMETS for Steamships, Oil Tankers, Oil Companies,
Chemical Works, etc.
OXYGEN BREATHING APPARATUS For Rescue Work
in Mines
MEDICAL OXYGEN APPARATUS For Resuscitation purposes
Oxygen Supplies of every description
Air Compressors Vacuum Pumps

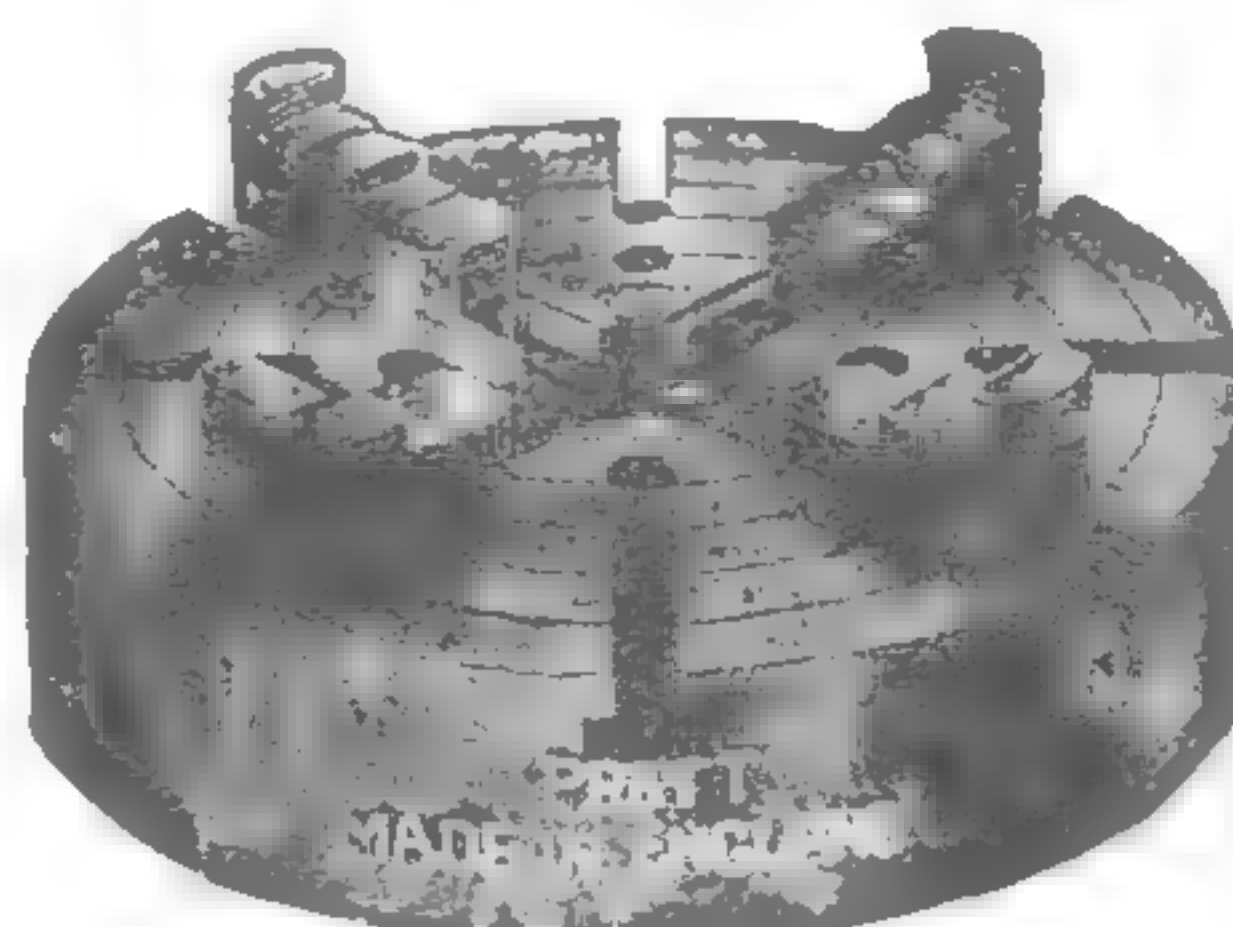
SIEBE, GORMAN & CO., LTD.
187 WESTMINSTER BRIDGE ROAD,
LONDON, ENGLAND

Cables:
"SIEBE, LONDON."

Codes used:
A.1, A.B.C. (5th Edition), Western
Union, Engineering & Private

PRATT CHUCKS

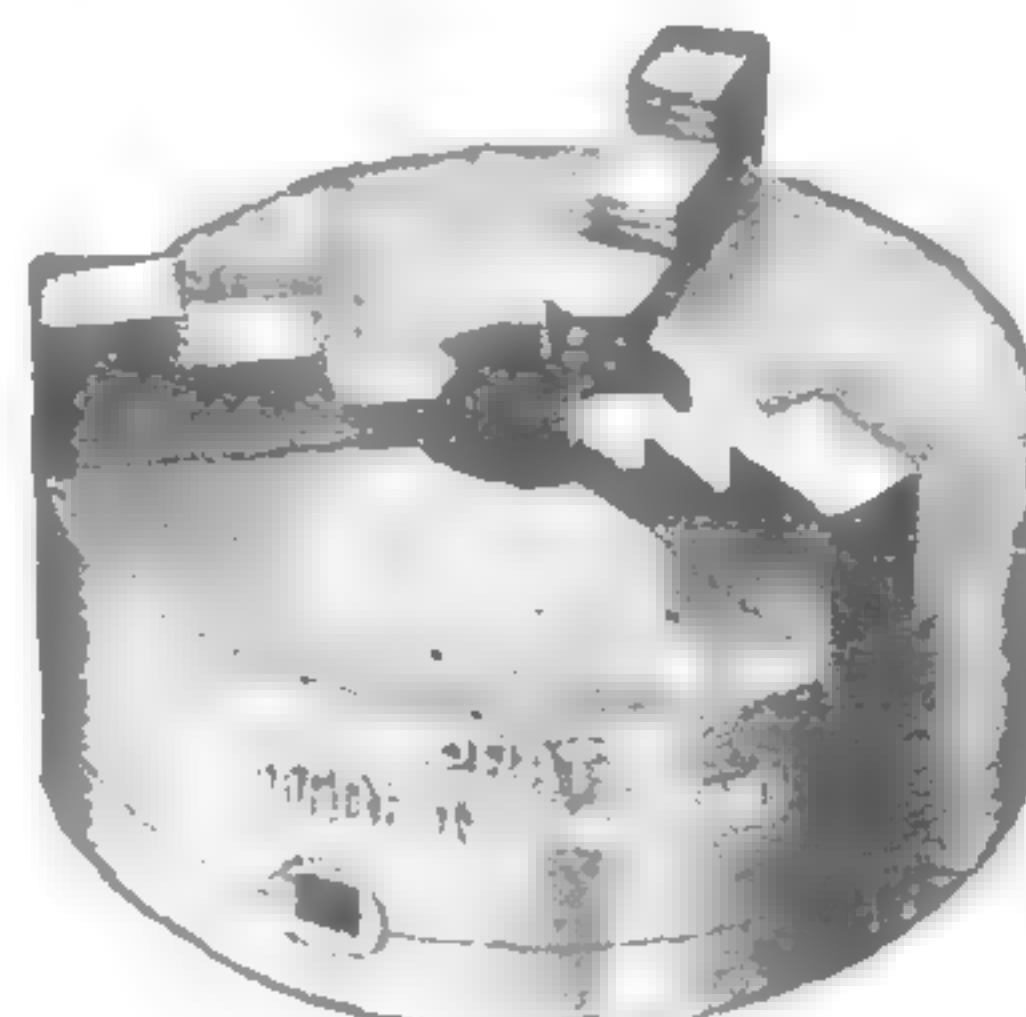
MADE IN ENGLAND



**INDEPENDENT
4 - JAW
CHUCKS**

Reversible Jaws and Solid Bodies.
Screws have Double-Thrust Bearings
(10 inch size and upwards)

STANDARD } 4½, 5, 6, 8, 9, 10, 12, 14, 15, 16, 17, 18, 20, 22, 24, 26,
SIZES: } 28, and 30 inches diam.



**3 - JAW GEARED
SCROLL CHUCKS**

SELF-CENTRING

Sizes in Progress:

5, 6, 7½, 9 and 10½ inches diam.
Full range of sizes to follow.

PRICE LISTS ON APPLICATION

MANUFACTURED BY

F. PRATT & CO., LTD.,
Eagle Iron Works, **HALIFAX, England**

London Offices:

7 LAURENCE POUNTNEY HILL, E.C.4.
EXPORT ORDERS THROUGH USUAL MERCHANTS AND SHIPPERS.

IRON AND STEEL TUBES

for Gas, Water, Air, Steam, Oil, Sewage, Irrigation & other purposes

*Black and Galvanized Tubes and Fittings.
Boiler Tubes · Weldless Steel Tubes · Boring Tubes.
: Main Steam Pipe Installations. :
Tubular Steel Tramway & Electric Light Poles.
Ashford's Patent Tube Well Strainers.
Steel Plates. _____ Steel Castings.*

STEWARTS AND LLOYDS, LTD.

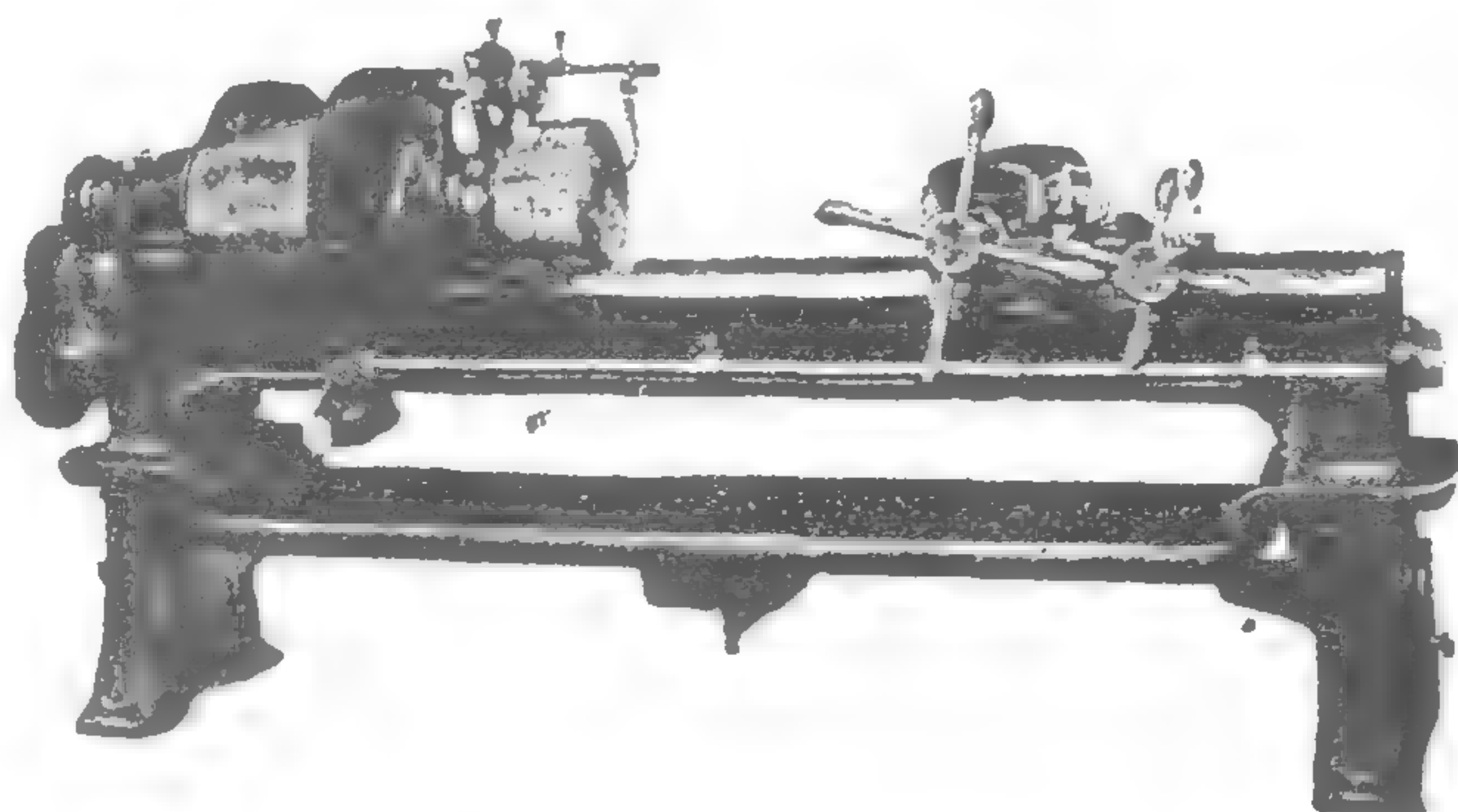
GLASGOW

BIRMINGHAM

LONDON

SHANGHAI OFFICE: 6 KIUKIANG ROAD

The Machine you require in your Works.



PATENT AUTOMATIC BOILER STAY SCREWING MACHINE,
WITH LEADING SCREW.

This Machine has been specially designed for screwing long Bolts, Boiler Stays, etc. It is provided with an extra long bed so that threads 36 inches long can be screwed at one setting. A Leading Screw extending the full length of the bed, and rigidly supported at each end of the bed is fitted. This ensures the thread being screwed perfectly true to pitch, which is of the utmost importance in Boiler Stays and certain other classes of work. The necessary pitch changes are obtained by means of change gears as on a lathe. The Machine is fitted with our Patent Hand and Automatic Releasing Motion, Automatic Closing Device, Micrometer Adjustment for making fine adjustments to the Dies, which can be done while the machine is in motion, Automatic Pump, two-speed Countershaft, etc.

The Machine is made in various sizes, and with two Heads.

Further particulars will be furnished on application.

JOSHUA HEAP & CO., LTD.,

ASHTON-UNDER-LYNE, ENGLAND.

A SPECIAL MACHINE FOR GENERAL WORK.

Take a Flat Turret Lathe, **equipped for bar work** like that shown here. Set the turning, cutting-off, threading and other tools of the standard equipment for the **diameters and shoulder lengths** of the piece you wish to make. **And then—Presto!** You have a special machine for that piece. The machine will turn out piece after piece with an accuracy limited by the **wear of the cutting edges only**, and at speeds and feeds that are exactly right for each individual cut. And that is more than some more complicated and special machines can do.

On chucking work it is the same, except that **the simple, flexible and effective equipment** of the Flat Turret Lathe shows up **to even better advantage**.

You may have a small shop, or a big one. In either case the Flat Turret Lathe is the **most efficient machine for a large percentage of your lathe work**.

Catalogue and descriptive literature sent post free on request.

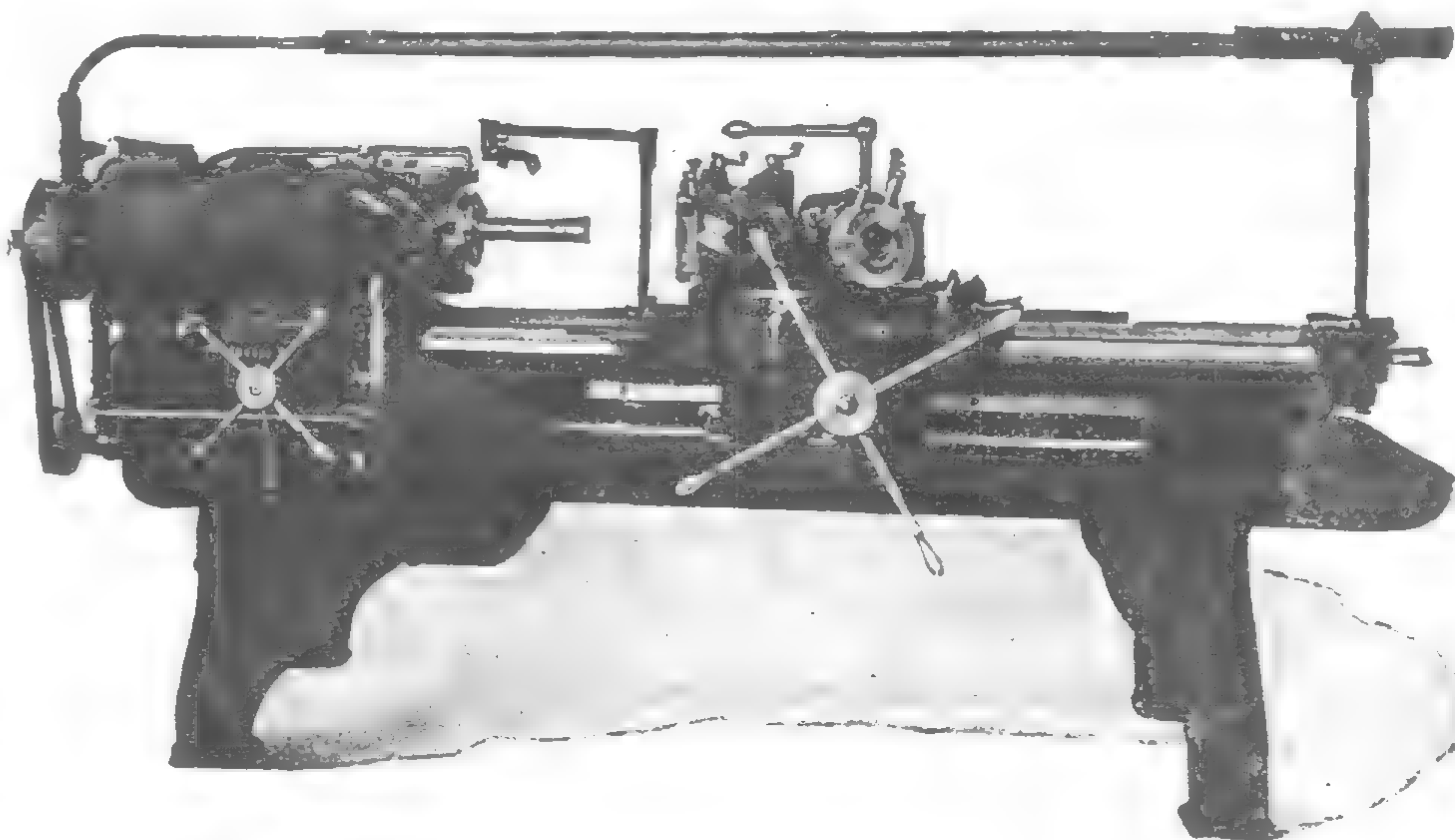
JONES & LAMSON MACHINE COMPANY,

97 Queen Victoria St., London, England.

Cable Address: "Turret" London

Springfield, Vermont, U.S.A.

Cable Address: "Turret" Springfield, Vt.



Chinese National Wireless Telegraph Co., Ltd.

(MARCONI COMPANY'S PATENTS)

Handley Page, Limited

Aeronautical Engineers.

Siemens Brothers & Co., Ltd.

Electrical Engineers & Contractors.

Relay Automatic Telephone Co., Ltd.

Automatic Telephones.

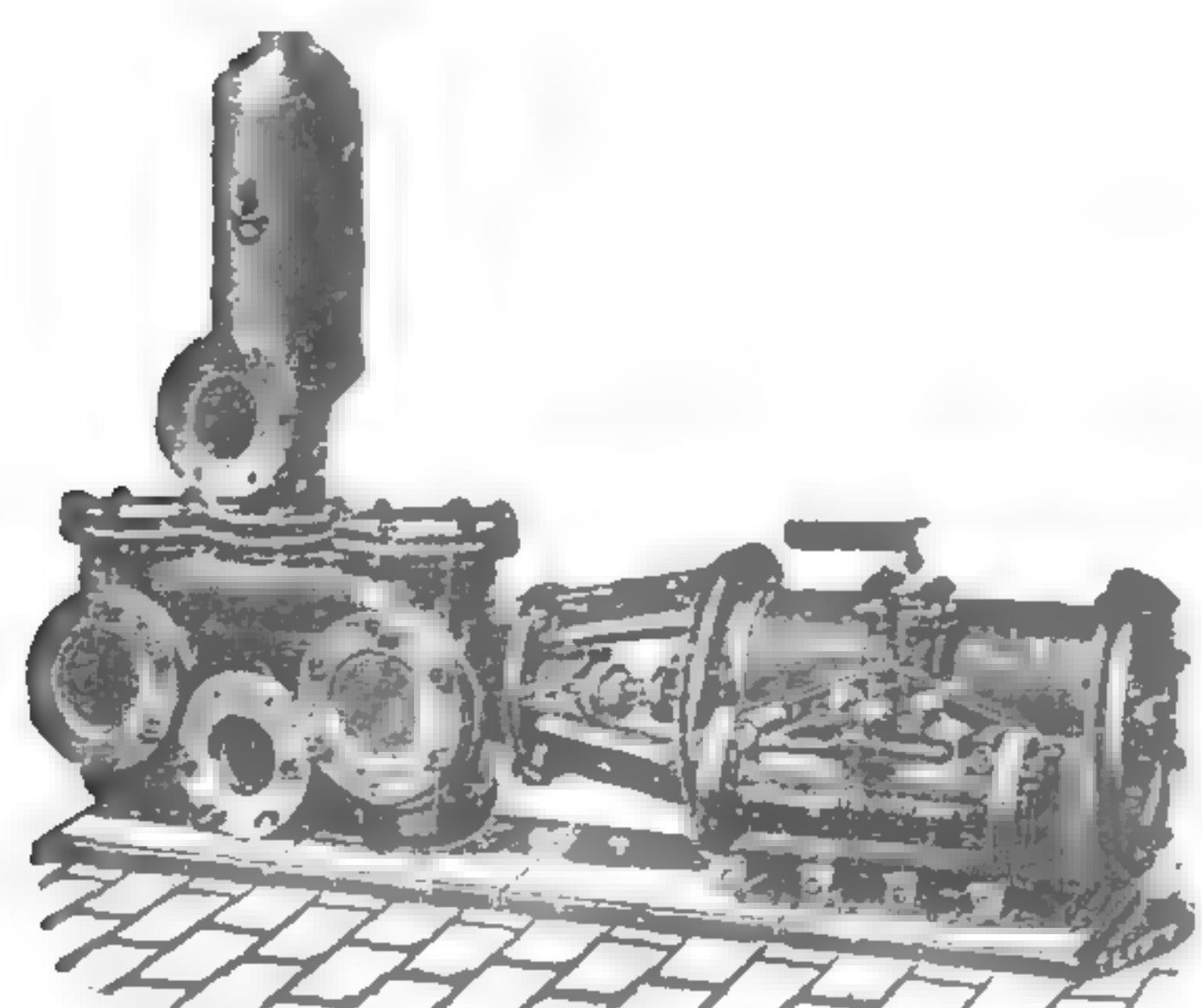
Sole Agents in China:

PEKIN SYNDICATE LIMITED

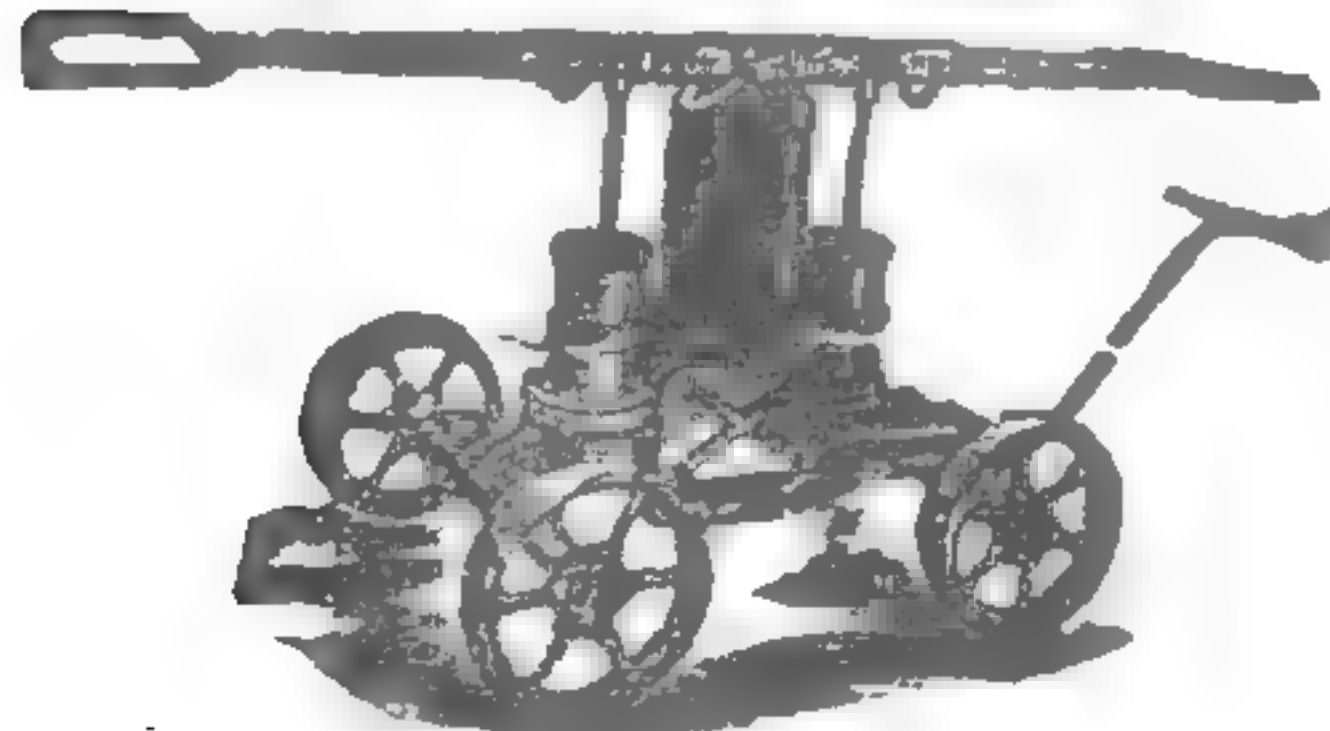
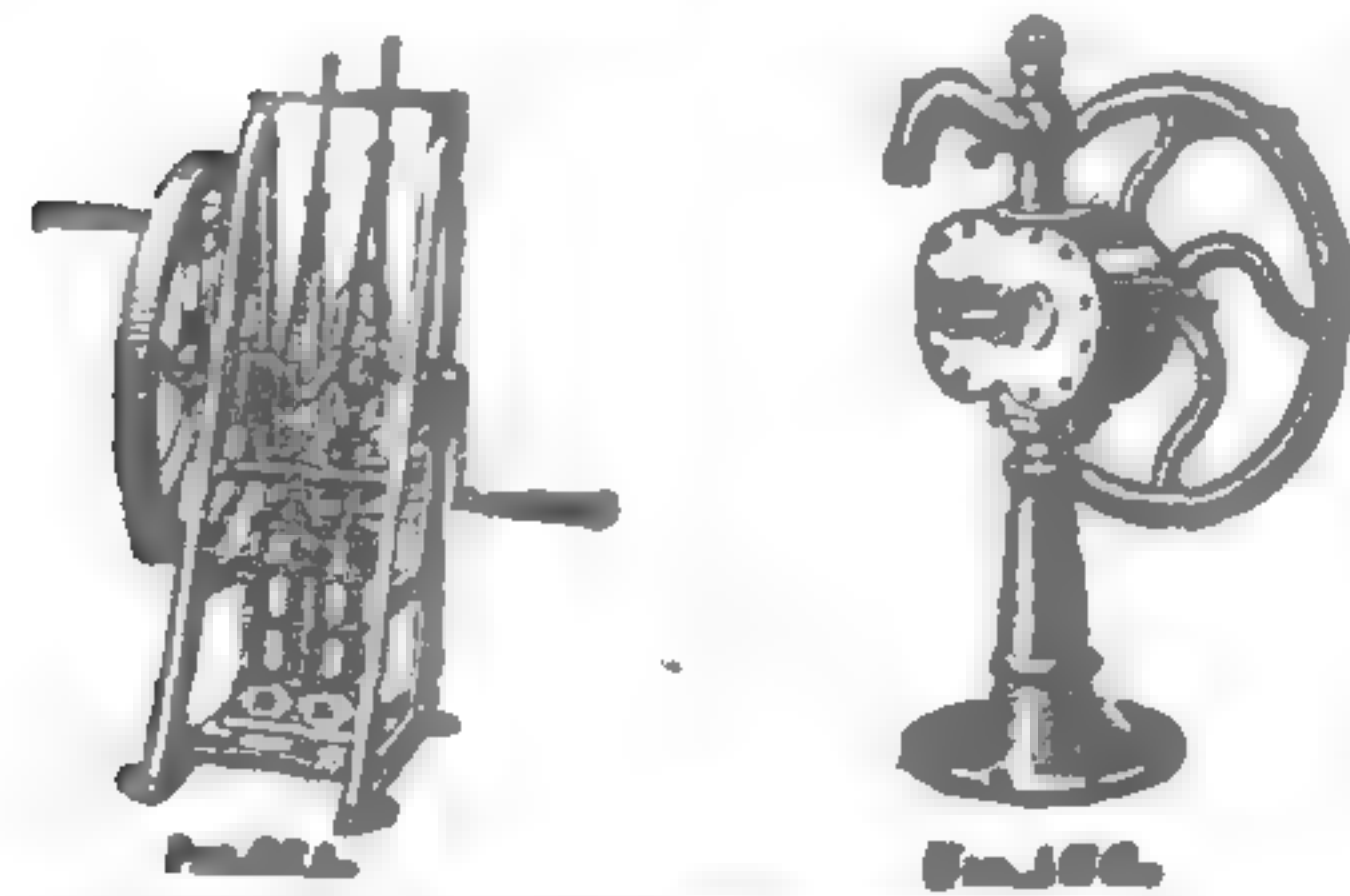
PEKING

TELEGRAMS: "SINDACATO, PEKING."

TELEPHONE No. 1120 EAST



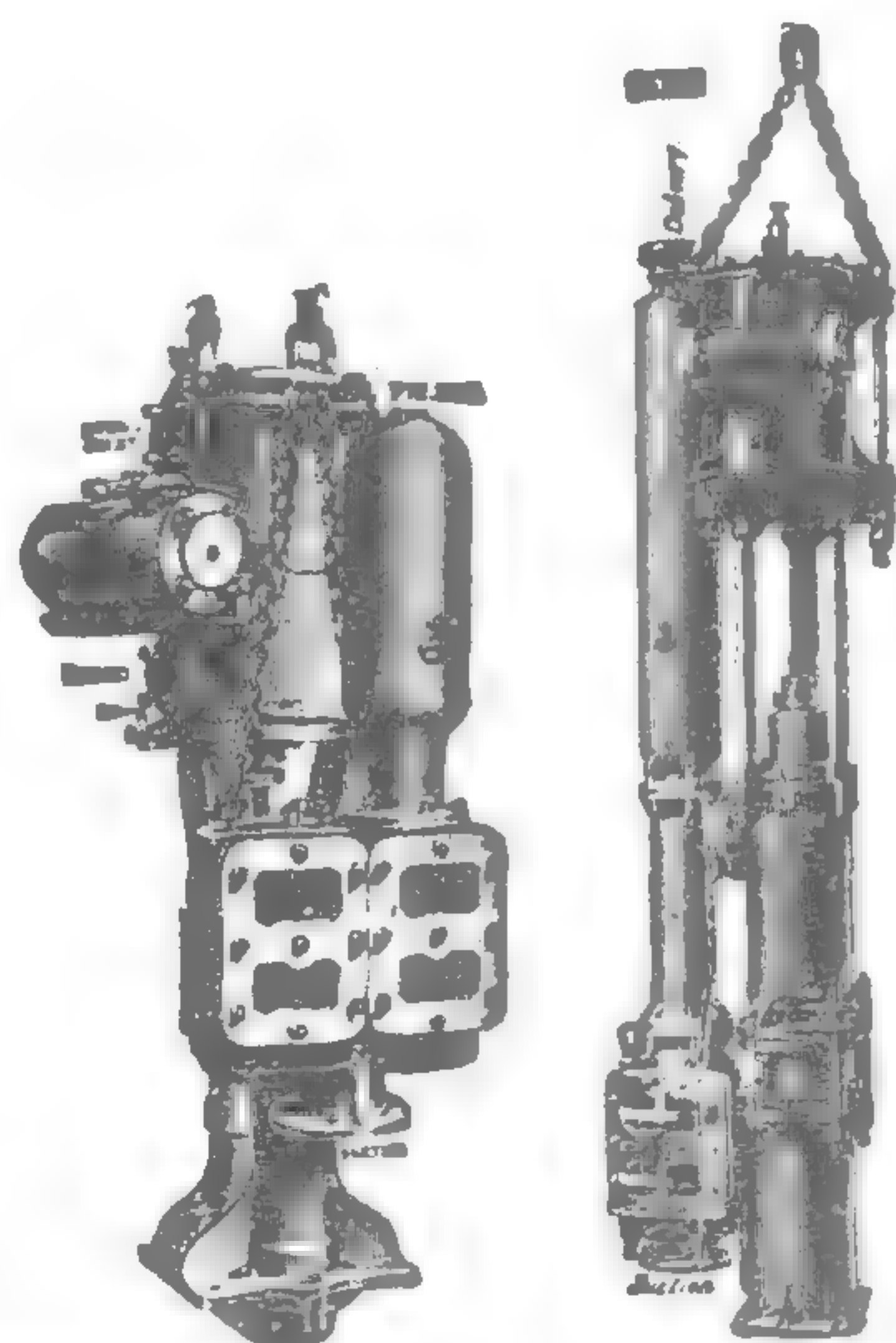
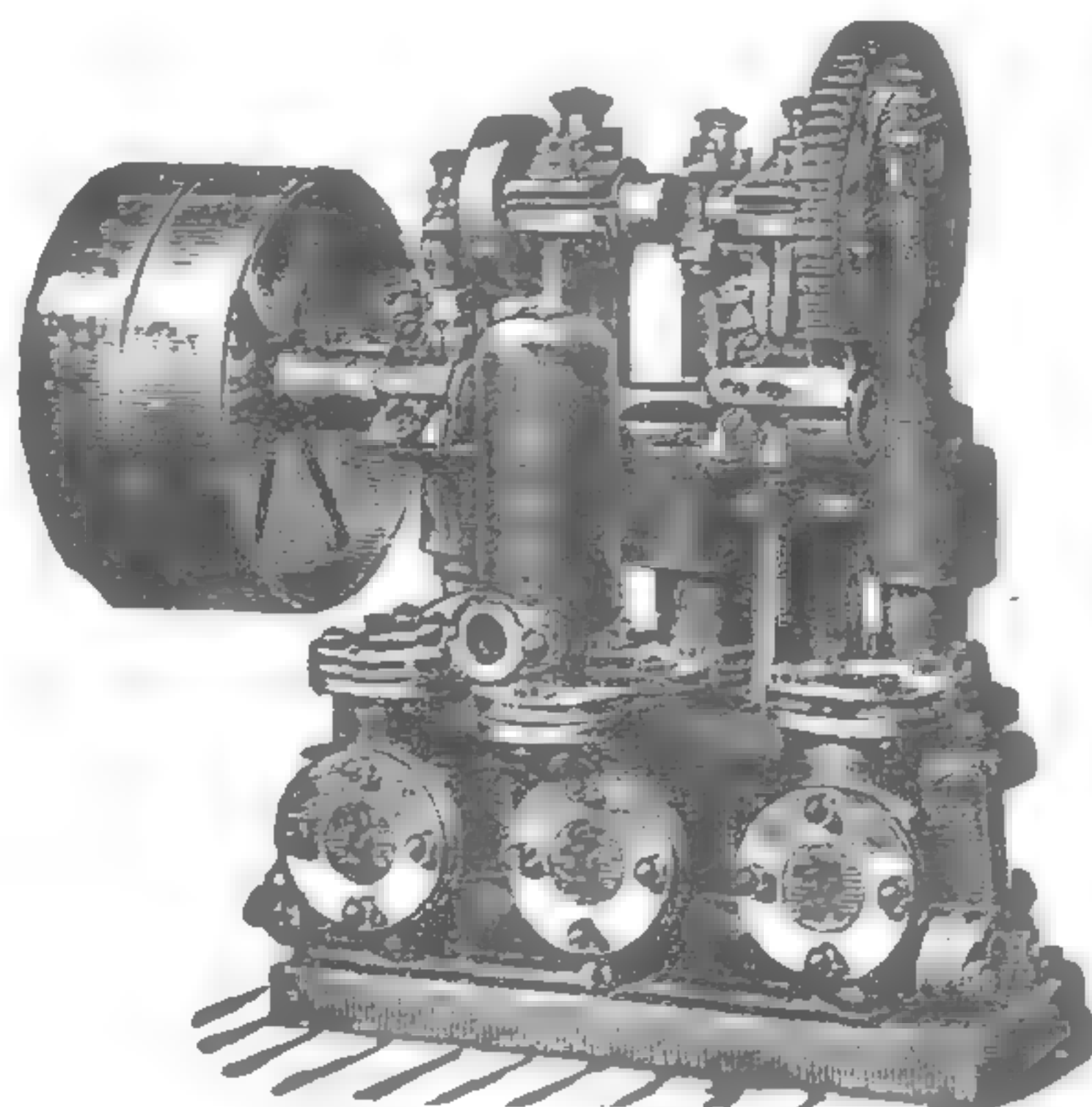
STEAM PUMP for General Purposes.



WE MANUFACTURE PUMPS

FOR EVERY PURPOSE

To be worked by HAND, STEAM, BELT, WIND,
WATER or ELECTRIC POWER.



SINKING PUMPS for COLLIERIES,
MINES, Etc.



FIG. 191.

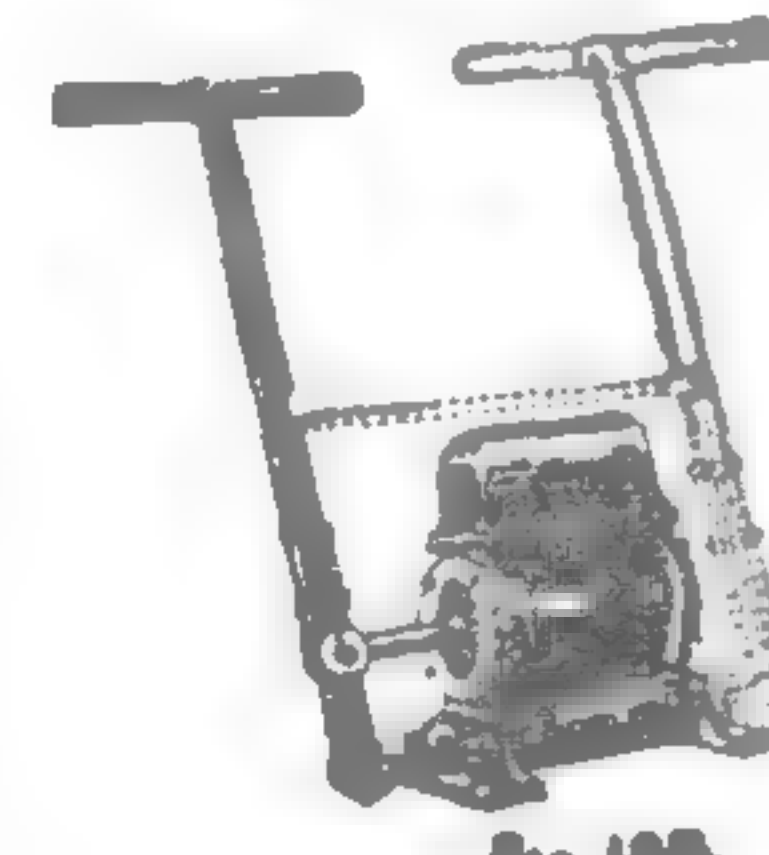


FIG. 192.

Write for "Eastern" List.

JOSEPH EVANS & SONS

(WOLVERHAMPTON) LTD.

CULWELL WORKS,
WOLVERHAMPTON, ENGLAND.

McCLINTIC-MARSHALL PRODUCTS CO.

ENGINEERS & MANUFACTURERS
**STEEL
CONSTRUCTION**
ANNUAL CAPACITY 400,000 TONS.

McClintic-Marshall Construction Co.

Riter-Conley Manufacturing Co.

Union Shipbuilding Co.

Send for Catalogue "E."

50 Church Street, New York, U.S.A.

Cable: MACMARSH, Newyork



BRIDGES—BUILDINGS—RIVETED PIPE—STORAGE TANKS—TRANSMISSION TOWERS—SHIPS

ELECTRICAL AND MINING MACHINERY

ORIGINATORS OF THE CASCADE MOTOR

Induction Motors

FOR

SINGLE SPEED WITHOUT SLIP RINGS

TWO SPEEDS

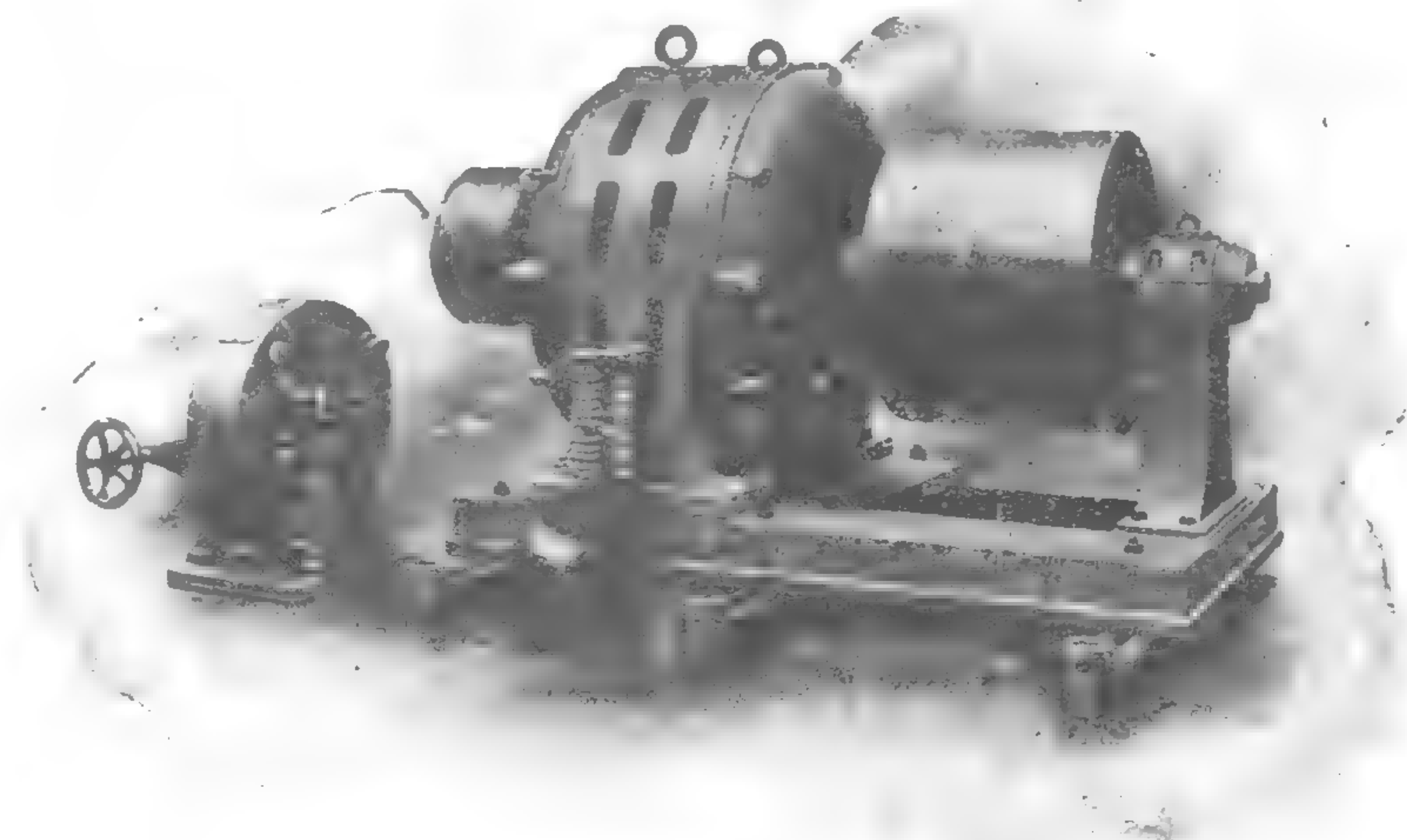
THREE OR MORE SPEEDS

Synchronous Motors

SELF-STARTING

AND

SELF-SYNCHRONISING UNDER LOAD



TWO SPEED CASCADE
INDUCTION MOTOR AND LIQUID STARTER

SANDYCROFT, LIMITED

LONDON and CHESTER

London Office: 4 BROAD STREET PLACE, E.C. 2.

LEARN TO SPEAK CHINESE

Spoken Chinese taught by the Modern Direct Method at the NORTH CHINA UNION LANGUAGE SCHOOL, PEKING. The faculty includes sixty Chinese and twenty foreigners. Enrollment last year one hundred and seventy-five.

SPECIAL CLASSES FOR BUSINESS MEN.

Apply to W. B. PETTUS, *Principal.*

"BON ACCORD"

CENTRIFUGAL PUMPS

Self-Lubricating Centrifugal
PUMPING ENGINES.

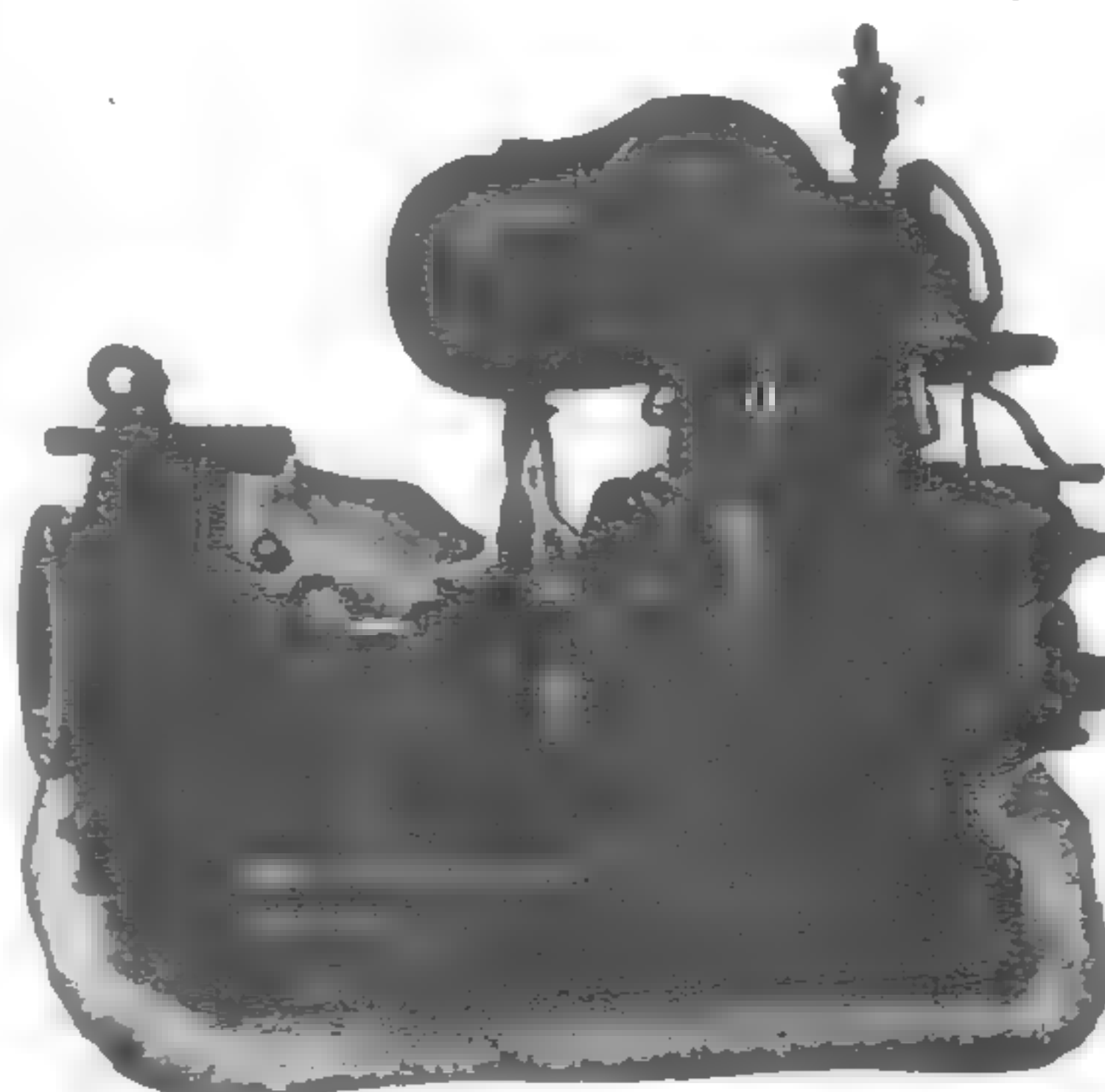
MARINE and LAND
TYPES for all DUTIES.

HIGH SPEED ENGINES
for driving
DYNAMOS, FANS, ETC.

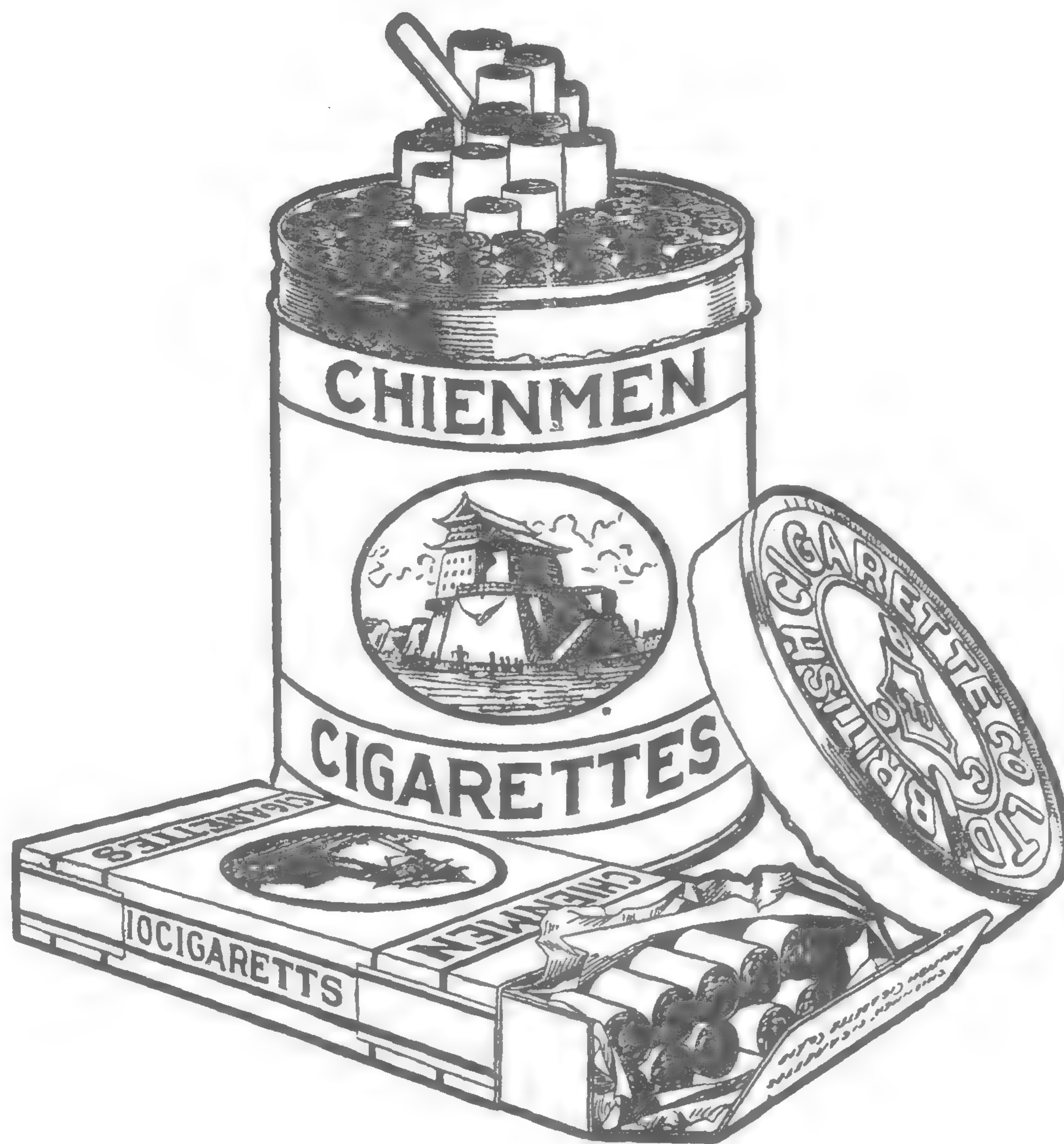
Try "Bon Accord" Packing for
the Stuffing Boxes of your
Pumps and Engines.

CONTRACTORS TO THE BRITISH
AND FOREIGN ADMIRALTIES.

DRYSDALE & CO., LTD.,
YOKER, GLASGOW, SCOTLAND.



CHIENMEN



Cigarettes

A brand well known to the "High Grade
Cigarette Smoking Public" of China.

BRITISH-AMERICAN TOBACCO CO. (CHINA), LTD.

Distributors



To Buyers of Iron and Steel

Pay, collect, deliver when agreed
(buy and sell again)

That policy makes **ROBERT GRANT**

A preferred customer;
A desirable distributor;
A dependable source of supply.

ROBERT GRANT makes that policy

Rule his organization;
Determine his mill connections;
Satisfy his customers.

He's building business for the future.

Pipe—Black and Galvanized. Sheets—Black, Blue and Galvanized
Nickel, Chrome and Vanadium High Speed and Carbon Tool Steels and Drill Rod
Milano and Bamboo Steel
Hot and Cold Rolled Strip Steel and Hoops

Washers
Wire Nails
Wire Rope

Bar Iron
Tin Plate
Terne Plate

Forging
Stampings
Tubings

Plates
Shapes
Bars

Billets
Blooms
Rails

Bolts
Nuts
Rivets



SINO-NORTH AMERICAN CO., LTD.

Cable Address: SINAM: NEW YORK

**IMPORTERS
EXPORTERS**

Head Office: MONTREAL, CANADA

New York Office:
1280-1286 WOOLWORTH BUILDING

BRANCHES and AGENCIES

Peking, Hongkong, Shanghai, San Francisco, Vancouver, Cincinnati, and Vladivostok

G. M. GEST, Managing Director

**ENGINEERS
CONTRACTORS**

Representing exclusively the following corporations:—

DOMINION TEXTILE CO., LTD.

Cotton Goods and Textiles.
In the Far East.

CANADA CARBIDE CO., LTD.

Calcium Carbide.
In China, India and Japan.

IMPERIAL WRITING MACHINE CO., LTD.

Typewriters.
In Japan.

MASSEY-HARRIS CO., LTD.

Harvesting Machines and Agricultural Implements.
In Japan and China.

STEEL COMPANY OF CANADA, LTD.

Iron, O. H. steel, forgings, sheets, axles, nuts, bolts, screws, wire, lead, pipe, etc.
In Siberia, Manchuria and Chosen.

OGILVIE FLOUR MILLS CO., LTD.

Flour, oatmeal, corn and barley products.
In the Far East.

BRANDRAM-HENDERSON CO., LTD.

White lead, paints, and varnishes.
In Russia and Japan.

CANADIAN LOCOMOTIVE CO., LTD.

Locomotives: All types.
In the Far East.

DOMINION BRIDGE CO., LTD.

Bridges and structural steel work.
In the Far East.

THOS DAVIDSON MFG. CO., LTD.

Enameled, galvanized, tin ware. Copper and nickel plated ware and lithographed boxes and signs.
In China, Japan, India and the Dutch East Indies.

WARDEN KING-LIMITED

Hot water boilers, radiators, grates and miscellaneous pipe fittings.
In China, Japan, India, Siberia, Malaystraits and Dutch East Indies.

G. M. GEST-LIMITED

Engineers and contractors.
In China, Japan, India, Siberia, Malaystraits and Dutch East Indies.

TAYLOR-FORBES CO., LTD.

Builders' and General Hardware Lawn Mowers and Specialties.
In China, Japan, India, Siberia, Malaystraits and Dutch East Indies.

WATEROUS ENGINE WORKS CO., LTD.

Fire Engines, Road Making and Saw-Mill machinery, Power transmission machinery, Boilers, etc. Pulp Mill and Cement Machinery.
In India, China, Japan, Malaystraits, and Dutch East Indies.

MITSUBISHI GOSHI KAISHA

(MITSUBISHI COMPANY)

CAPITAL (PAID-UP) Yen 30,000,000

Established in 1893

HEAD OFFICE: MARUNOUCHI, TOKYO.

DEPARTMENTS: GENERAL AFFAIRS DEPARTMENT.

INTELLIGENCE DEPARTMENT.

ESTATE DEPARTMENT.

PARTNERS: (BARON KOYATA IWASAKI (*President*);
(BARON HISAYA IWASAKI

BRANCHES: LONDON, NEW YORK, ETC.

Controlling Auxiliary Concerns as Below:

MITSUBISHI GINKO, LTD. (Mitsubishi Bank, Ltd.)

SUBSCRIBED CAPITAL Yen 50,000,000 PAID-UP CAPITAL Yen 30,000,000

HEAD OFFICE: MARUNOUCHI, TOKYO.

BRANCHES: TOKYO, OSAKA, KOBE, KYOTO, NAGOYA, SHANGHAI.

Agents for THE HONGKONG & SHANGHAI BANKING CORPORATION.

MITSUBISHI SHOJI KAISHA, LTD. (Mitsubishi Trading Co., Ltd.)

CAPITAL (PAID-UP) Yen 15,000,000

HEAD OFFICE: MARUNOUCHI, TOKYO.

BRANCHES AND AGENCIES: TOKYO, NAGOYA, OSAKA, KOBE, MOJI, WAKAMATSU, KARATSU, NAGASAKI, OTARU, SHANGHAI, HANKOW, HONGKONG, YOKOHAMA, HANDA, TOYOHASHI, EJIRI, TSURUGA, KURE, SASEHO, MURORAN, HAKODATE, AOMORI, KUSHIRO, TAIPEH, CANTON, HAIPHONG, PEKING, TIENSIN, DAIREN, TSINGTAU, TSINANFU, VLADIVOSTOK, SINGAPORE, JAVA, LONDON, PARIS, GENOA, ROME, NEW YORK.

MITSUBISHI ZOKEN KAISHA, LTD. (Mitsubishi Ship-building Co., Ltd.)

SUBSCRIBED CAPITAL Yen 50,000,000 PAID-UP CAPITAL Yen 30,000,000

HEAD OFFICE: MARUNOUCHI, TOKYO.

DOCKYARDS AND ENGINE WORKS: NAGASAKI, KOBE, HIKOSHIMA.

ARMS AND STEEL WORKS: NAGASAKI.

INTERNAL COMBUSTION ENGINE WORKS: KOBE.

MITSUBISHI SEITETSU KAISHA, LTD. (Mitsubishi Iron Foundry, Ltd.)

SUBSCRIBED CAPITAL Yen 30,000,000 PAID-UP CAPITAL Yen 15,000,000

HEAD OFFICE: MARUNOUCHI, TOKYO.

FOUNDRY: KENJIHO (CHOSEN)

MITSUBISHI KOGYO KAISHA, LTD. (Mitsubishi Mining Co., Ltd.)

SUBSCRIBED CAPITAL Yen 50,000,000 PAID-UP CAPITAL Yen 40,000,000

HEAD OFFICE: MARUNOUCHI, TOKYO.

MINES: SADO, IKUNO, KANAYAMA, OSARUZAWA, ARAKAWA, HISAICHI, YOSHIOKA, OMODANI, TAKANE, MAKIMINE, TAKARA, TSUNATORI, TAKATORI, OKUYAMA, TATSUKAWA, TOGI, AKENOBE, RYUOH.

COLLIERIES: TAKASHIMA, OCHI, YOSHINOTANI, KISHIDAKE, HOJO, NAMAZUTA, SHINNEW, KANADA, SASAURA, ABURATO, KAMIYAMADA, OYUBARI, BIBAI, ASHIBETSU.

METALLURGICAL WORKS, REFINERIES AND FACTORIES: OSAKA AND NAOSHIMA.

MITSUBISHI SOKO KAISHA, LTD. (Mitsubishi Warehouse Co., Ltd.)

SUBSCRIBED CAPITAL Yen 10,000,000 PAID-UP CAPITAL Yen 5,000,000

HEAD OFFICE: MARUNOUCHI, TOKYO.

WAREHOUSES: TOKYO, OSAKA, KOBE, MOJI, YOKOHAMA.

MITSUBISHI KAIJO KASAI HOKEN KABUSHIKI KAISHA (Mitsubishi Marine & Fire Insurance Co., Ltd.)

SUBSCRIBED CAPITAL Yen 5,000,000 PAID-UP CAPITAL Yen 1,250,000

HEAD OFFICE: MARUNOUCHI, TOKYO.

AGENCIES: LONDON, NEW YORK, OSAKA, KOBE AND OTHER IMPORTANT CITIES AND PORTS IN THE WORLD.



To Have Them is To Sell Them

Jacobs Chucks are necessary tools in the modern shop and factory. Whenever drills must be used, the chuck that grips relentlessly, bores accurately and is easily adjusted—a Jacobs Chuck—is in constant demand.

To aid our dealers in selling Jacobs Chucks we will supply the folder shown. Any quantity, in any language—just specify your needs. They have helped others to more sales; they will help you.

Be sure your stock of Jacobs Chucks is sufficient to meet the demand occasioned by the use of the folder.

Carried in stock and for sale in

SHANGHAI, CHINA

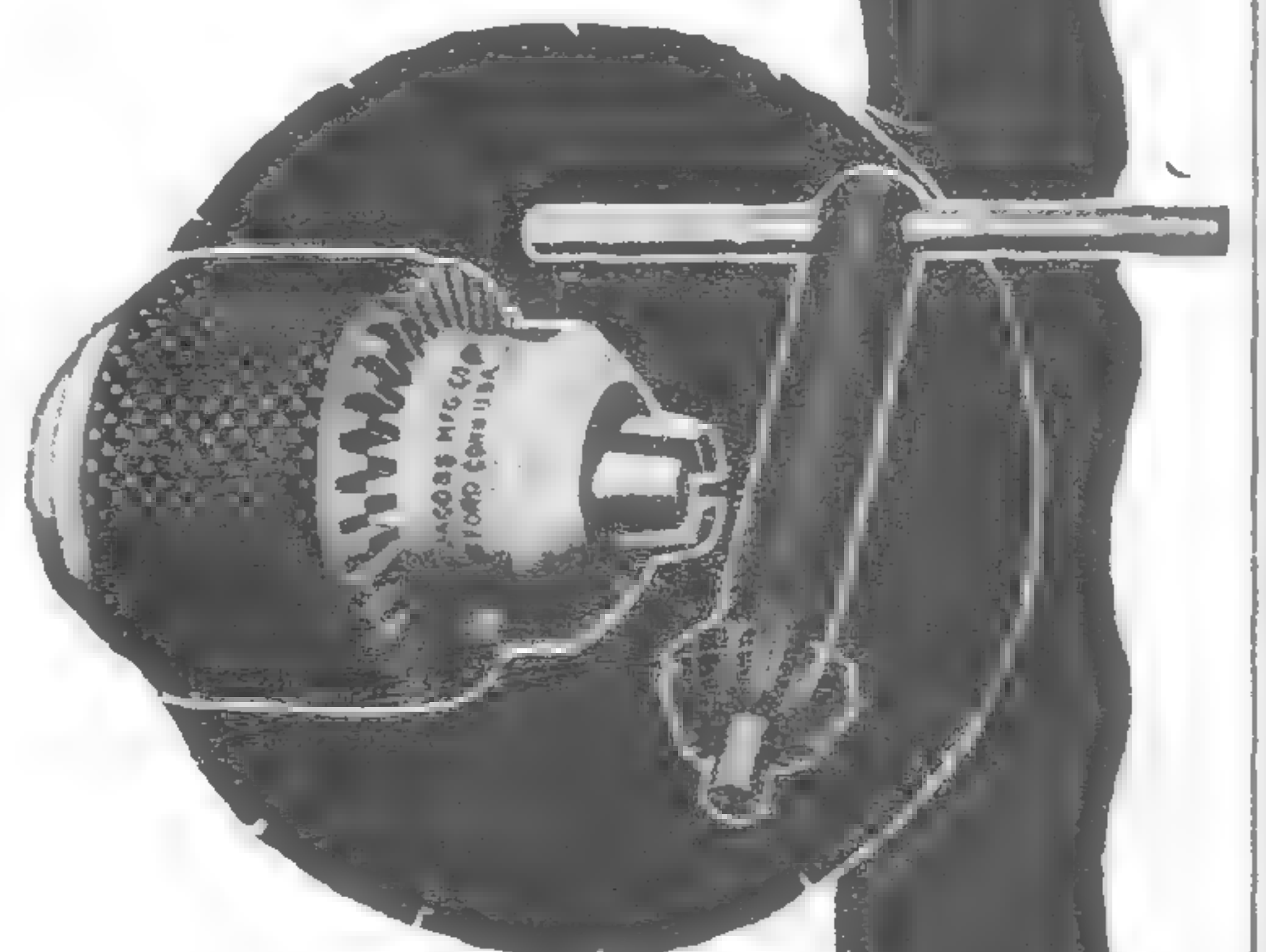
by

Yourovetta Home and Foreign Trade Co., Inc.

JACOBS MFG. CO.

DEPT. 118

Hartford, Connecticut, U. S. A.



BRILLIANT WIRE LAMPS

MORE LIGHT, LESS COST

牌  老

泡電安利博

省費亮光

發包承
售裝辦
電電電
氣燈業
機火工
械表程
材風計
料扇訓

博利安電料公司

上海英大馬路地球場
電話 中央四、九〇七



B-207



The only real and dependable standard of excellence for electric wires and cables is service. We invite your consideration of Standard Products which are guaranteed by over 37 years of continuous and successful service.

STANDARD Products

Copper Wire, Tubes, Rods
Brass Wire, Tubes, Rods
Bronze Wire and Rods
Colonial Copper Clad Steel Wire
Trade C.C.C. Mark
Magnet and Weatherproof Wire
Rubber Insulated Wire
Lead Covered and Armored Cables
D.S. and D.O.A. Cable Terminals
Cable Joint and Junction Boxes
"Ozite" Insulating Compounds

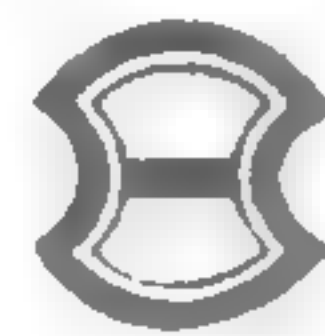
We have every facility for meeting your requirements, however large, promptly.

Standard Underground Cable Co.

Pittsburgh, Pa., U.S.A.

Agents for China:

Andersen, Meyer & Co., Ltd., Shanghai.



NIPPON MENKWA KABUSHIKI KAISHA

(THE JAPAN COTTON TRADING CO., LTD.)

Head Office: OSAKA, JAPAN

Established 1892

COTTON, COTTON YARN, COTTON PIECE GOODS, WOOL, RAW SILK, AND GENERAL COMMISSION MERCHANTS

Capital Subscribed	...	Yen 10,000,000.00
Capital Paid-up	...	Yen 8,000,000.00
Reserve Funds and Surplus	...	Yen 7,500,000.00

President: MATAZO KITA, Esq.

Directors: ATSUSHI YAMADA, Esq. (Managing). KANSHIRO SUYEYOSHI, Esq. YOSHIOKI BABA, Esq.
HAZAMA OHOKA, Esq.

Branches: Semba (Local), Shanghai, Hankow, Dairen and Bombay

Agencies: Kobe, Tokio, Yokohama, Tientsin, Seito, Hongkong, Newchwang, Tiehling, Changchun, Harbin, Calcutta, Karachi, Rangoon, Alexandria, Liverpool, New York and Buenos Aires.

Sole Buying Agency in U. S. A.: JAPAN COTTON TRADING CO. OF TEXAS

" " in Chosen: CHOSEN MENKWA KABUSHIKI KAISHA

Factories: Cotton Press at Hankow and India



30,000 RPM!

For grinding dies, reamers, gauges, milling cutters; for longitudinal, cylindrical and internal grinding, the **DUMORE** grinds tools with greatest speed and accuracy.

DUMORE HIGH SPEED GRINDER

The dynamically balanced armature, spindle and pulleys eliminate all end play and vibration and remove the possibility of chatter marks.

The **DUMORE** with 10,000 r.p.m. on the motor spindle and 30,000 r.p.m. on the internal spindle gives a cutting speed to the wheels which enables them to clear themselves and enables the operator to keep his work to size.

Weighing only 17 pounds, the **DUMORE** is easily carried from one machine to another and is set up in a minute in a milling machine, shaper or lathe. Its Universal Motor operates on either direct or alternating current.

The **DUMORE** Grinder is just the tool you have been looking for. Write today and learn more about it. Ask about Equipment A for deep internal grinding, Equipment B for button die grinding, **DUMORE** Drills and Fractional H. P. Motors.

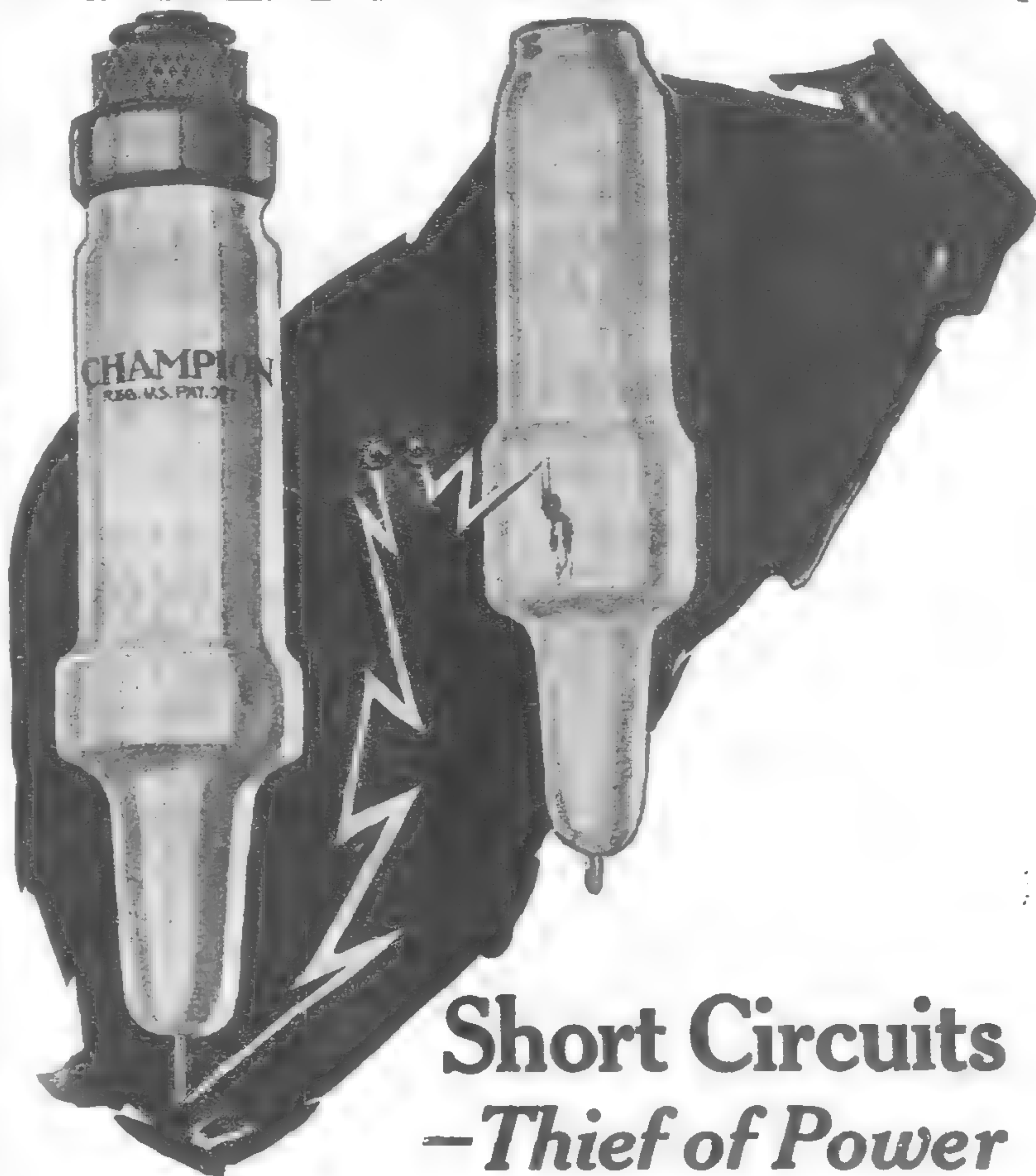
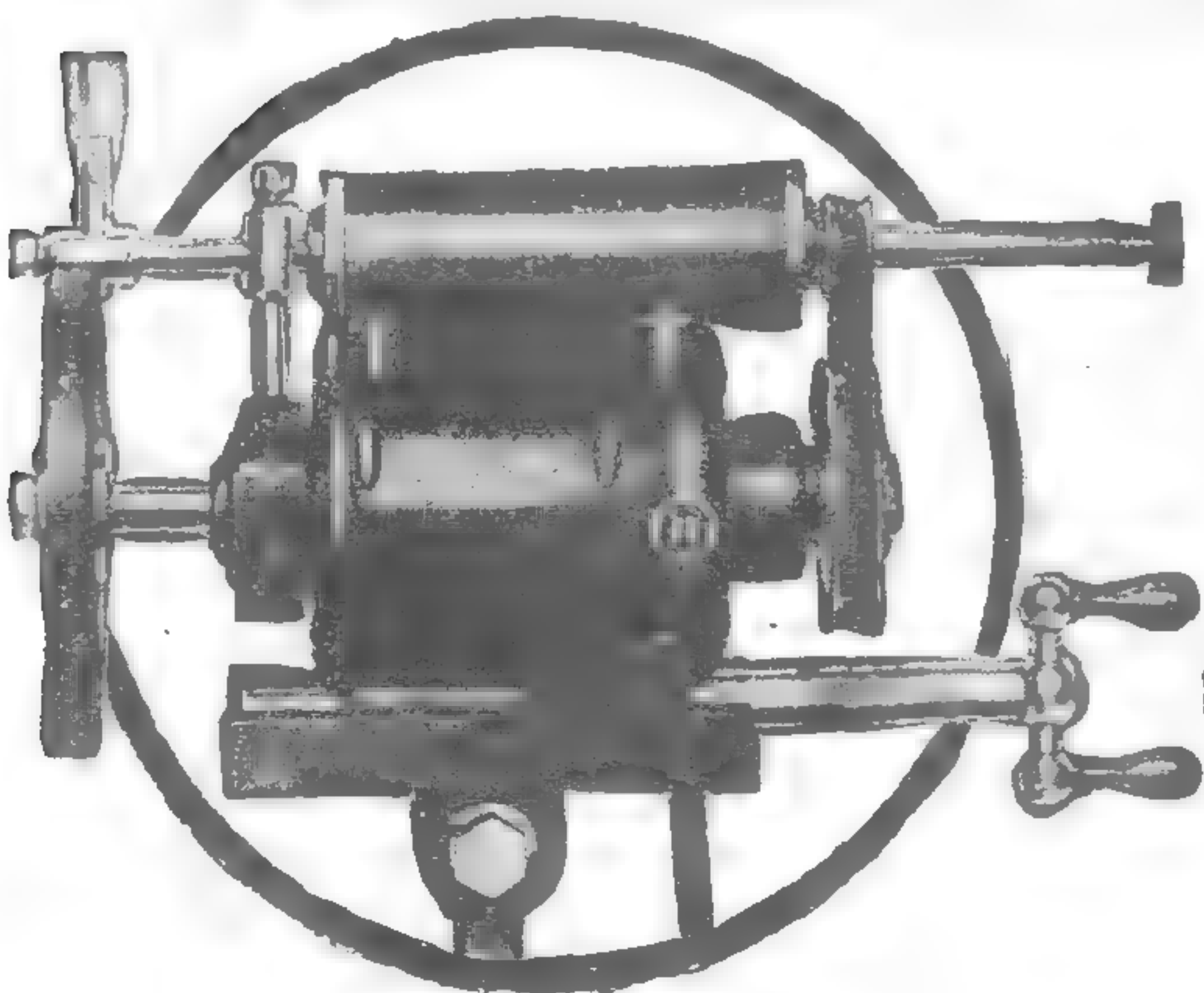
Wisconsin Electric Company

500 Junction Avenue

Racine, Wis., U. S. A.

Cable Address — "Dumore"
Racine

Correspondence invited
with responsible firms in
view of representation.



Short Circuits —Thief of Power

A broken, cracked or inefficient spark plug insulator causes short circuit and renders the plug useless. And useless spark plugs mean idle cylinders and stolen power.

Champion Dependable Spark Plugs

reduce the liability of short circuit caused by over heating. Because Champions are equipped with No. 3450 Insulators and No. 3450 exerts half again as much resistance to current when heated.

And Champion Insulators don't crack or crumble in ordinary service. The gasket construction protects the insulator from the shocks of explosions within the cylinders. No steel touches the insulator. Thus its ability to resist shock and vibration is increased two and one-half times.

No. 3450 Insulator looks like porcelain and has all the advantages of porcelain without the disadvantages. It is not brittle, does not crumble, and offers three times the resistance to extreme temperature changes.

These are the reasons why Champion Dependable Spark Plugs are used more than all other spark plugs combined, all over the world. For every type of service in internal combustion engines under the most rigorous conditions, Champion Spark Plugs are most reliable, dependable, efficient.

The great Champion factory producing 100,000 plugs a day supplies the world with more than half its spark plugs. Dealers who seek the satisfaction of their customers as well as their own profit, sell Champion Dependable Spark Plugs. Large stocks of all types—for motor car, motor boat, motor cycle, tractor, lorrie, aeroplane or farm engine—always on hand, insure prompt deliveries. Write for complete information.

Champion Spark Plug Company
Toledo, Ohio, U. S. A.



Champion Dependable Spark Plugs

A53—Long — 1/8-18 — For Buick Cars. Has long shell conical porcelain. The long shell allows the spark to ignite within the cylinder instead of in a pocket as occurs when the ordinary type of plug is used.

Jardine, Matheson & Co., Ltd.

CANTON
CHENG TU
CHUNGKING

HANKOW
HARBIN
HONGKONG

ICHANG
PEKING
SHANGHAI

TIENTSIN
TSINGTAO
ETC.

Engineering Show Room: 8A YUEN-MING-YUEN ROAD, SHANGHAI

Sole Agents for Associated British Machine Tool Makers, Limited.

Comprising the following Firms:—

JAMES ARCHDALE & CO., LTD., Birmingham.

WILLIAM ASQUITH, LTD., Halifax.

J. BUTLER & CO., Halifax.

THE CHURCHILL MACHINE CO., LTD., Manchester.

KENDALL & GENT, LTD., Manchester.

H. W. WARD & CO. LTD., Birmingham.

JOHN LANG & SONS, LTD., Johnstone, Glasgow.

J. PARKINSON & SON, Shipley.

GEO. RICHARDS & CO., LTD., Broadheath, Manchester.

THOMAS SHANKS & CO., Johnstone, Glasgow.

SMITH & COVENTRY, LTD., Manchester.

The full range of Machine Tools manufactured by this combination is as follows:

LATHES

Sliding Surfacing and Screwcutting Lathes, Plain Lathes, High Speed Lathes, Axle Lathes, Toolroom Lathes, Surfacing and Boring Lathes, Vertical Boring Lathes, Cutting-off Lathes, Heavy Forge Lathes, Gun Lathes, Shafting Lathes, Break Lathes, Wheel Lathes, Relieving Lathes, Capstan, Turret and Brassfinishers Lathes of all types. Chucks and Self-opening Dieheads.

DRILLING MACHINES

Radial Vertical Drills of all sizes. Girder, Portable and Multiple-spindle Radials, Pipe-flange Drilling and Facing Machines, Ball-bearing Sensitive Multiple Drills and High-speed Drilling Machines.

MILLING MACHINES

Plain, Vertical, Horizontal and Universal Milling Machines, Plano-Milling Machines, Keyway and Slot Drilling Machines, Thread Milling Machines.

PLANING AND SHAPING MACHINES

Planing Machines in all sizes. Armour-plate Planing Machines, Pillar and Traversing Head Type Shaping Machines, Spiral Bevel Gear Planers, Side Planing Machines, etc.

BORING MACHINES

Horizontal Boring Machines, Special Boring Mills for Turbine Casings, Tyre Boring Machines.

GRINDING MACHINES

Twist Drill Grinding Machines, Cylindrical Grinders, Crank Shaft Grinders, Cam Grinders, Universal Chucking Grinders, Internal Grinders, Piston Ring Grinders, Wet Tool Grinders, Cutter Grinders, etc.

SLOTING MACHINES

All types including High Speed and Portable Slotting Machines.

MISCELLANEOUS

Cutting-off Machines, Bolt Screwing Machines, Gun-boring, Lapping and Rifling Machines, Centring and Facing Machines, Nut Facing Machines, Universal Sharpening Machines, Mandrel Presses, Sand Blasts, Air Compressors, Broaching Machines, Twist Drills and Vices of all kinds.

ENQUIRIES SOLICITED



On Every Highway

On every highway throughout the motor world the familiar tread of United States 'Chain' Tread Tyres is seen. Because motorists everywhere know the economies they afford.

United States tyres come in five treads — a tread for every condition and use — a complete line.

The 'Nobby'—grips the road like files of steel.

The 'Chain'—the most efficient moderate priced anti-skid.

The 'Plain' Tread—a front wheel tyre perfectly balanced.

The 'Usco'—an anti-skid tyre costing little more than the average plain tread.

The 'Royal Cord'—the highest development of resiliency, flexibility, strength and anti-skid quality in multicord tyres.

Write for complete catalog and tyre data.

UNITED STATES RUBBER EXPORT CO., LTD.

Principal Office: 1790 Broadway, New York

San Francisco, Buenos Aires, Rosario, Rio de Janeiro, Havana, Manila, Santiago

UNITED STATES RUBBER CO. (Australasia), Ltd., Sydney, Australia

INDIA RUBBER PRODUCTS CO., LTD., London, Johannesburg, Madrid, Paris

Agents for China:



Andersen, Meyer & Co., Ltd., Shanghai



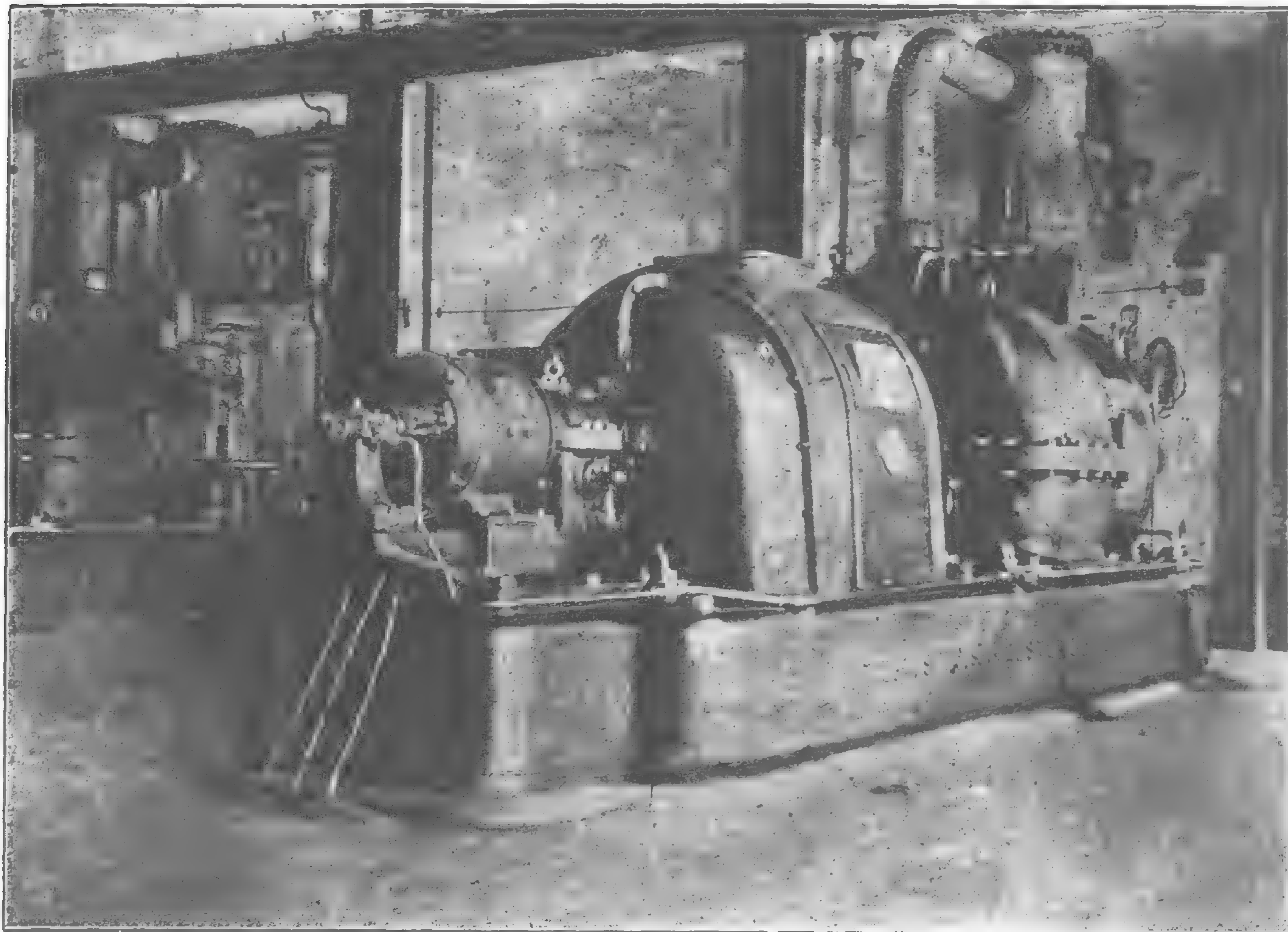


ENGINEERS AND CONTRACTORS

London—Hongkong—Canton—Shanghai—Tientsin—Kobe—New York

Telegraphic Address:
"KEECHONG," All Branches.

Hongkong Post Office Box: No. 131B
Shanghai Post Office Box: No. 84



750 K.W. Turbo-Alternator Installed in Supply Station (South China)

Sole Representatives in China for—

BRITISH INSULATED & HELSBY CABLES, LTD.
Hongkong and South China.

W. N. BRUNTON & SON, ENGLAND.
Wire Ropes and Fittings

CHUBB & SON'S LOCK & SAFE CO., LTD., ENGLAND.
Hongkong & South China.

JOHN DICKINSON & CO., ENGLAND.
(Hongkong & South China) Lithographic and Printing Machinery.

ROBT. HALL & SONS (BURY) LTD., ENGLAND (SOUTH CHINA).
Looms—Weaving machinery.

PAGET PRIZE PLATE CO., LTD.
Photographic Supplies.

KEIGLEY GAS & OIL ENGINE CO., LTD. (SOUTH CHINA).
Gas and Oil Engines.

CENTURY ELECTRIC CO.
(Hongkong & South China) Single Phase Motors.

CORRUGATED BAR CO., OF U.S.A., THE
THE BARBER ASPHALT & PAVING CO.
"Genasco" Roofing.

THE DURYEA MFG. CO.
Wooster Belting.

THE PITTSBURG TRANSFORMER CO.
Transformers.

NORTH BORNEO TRADING CO.
Lumber and Logs.

TRIANGULAR WIRE MESH.
(Hongkong & South China).

RED WING MOTOR CO., MINNESOTA.
Marine Oil Motors.

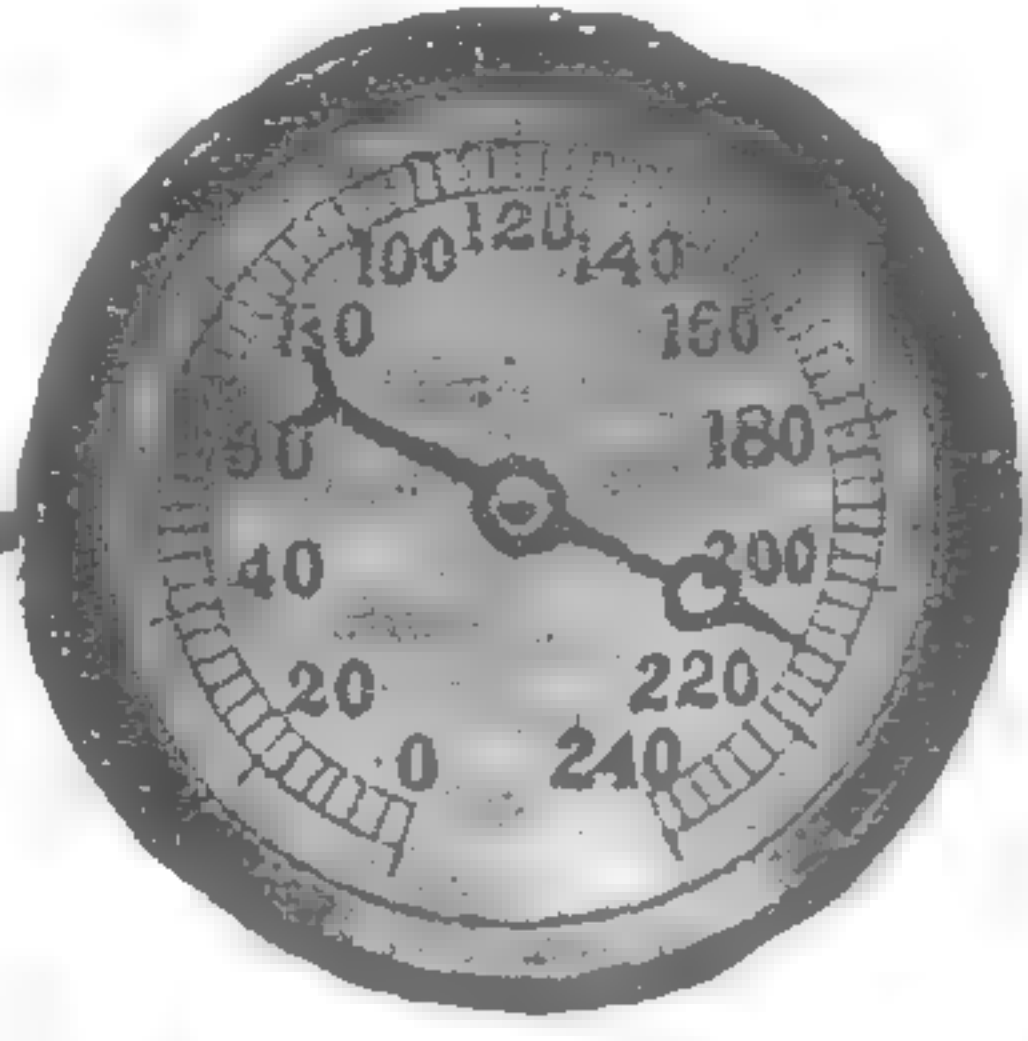
H. K. PORTER & CO., PITTSBURGH, PA.
Locomotives.

VICTOR TYPEWRITER CO., SCRANTON, PA. (SOUTH CHINA).
Victor Typewriters.

FEDERAL MOTOR TRUCK CO., DETROIT.
Motor Trucks.

LANDERS, FRARY & CLARK
(Electric Heating and Cooking Apparatus).

THE MANHATTAN RUBBER MFG. CO., PASSIC, N.J.



For HIGH PRESSURE STEAM
above 100-lbs., also super-
heated steam and com-
pressed air use
"PALMETTO" packing.



Working samples to prove
quality. No charge.

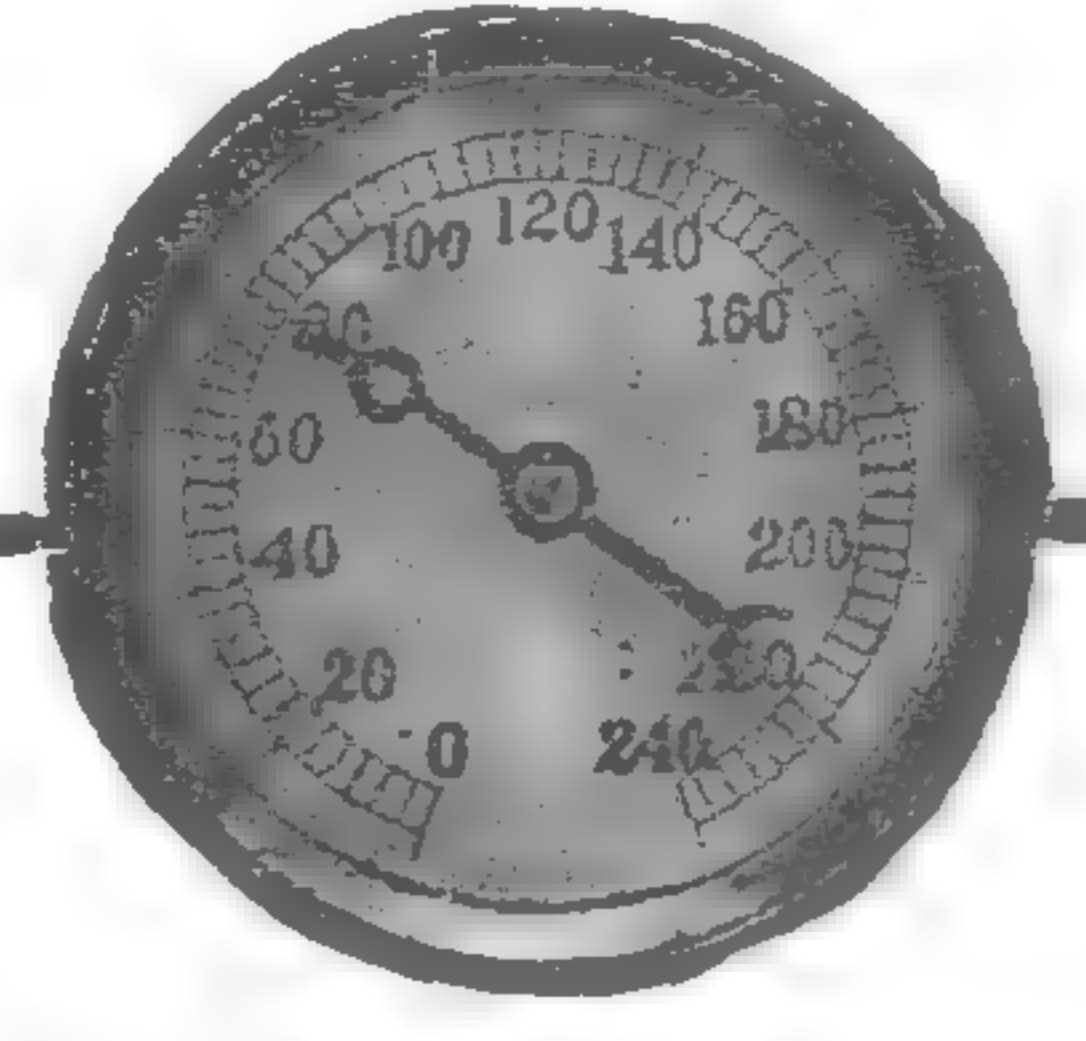
Greene, Tweed & Co.

Sole Manufacturers

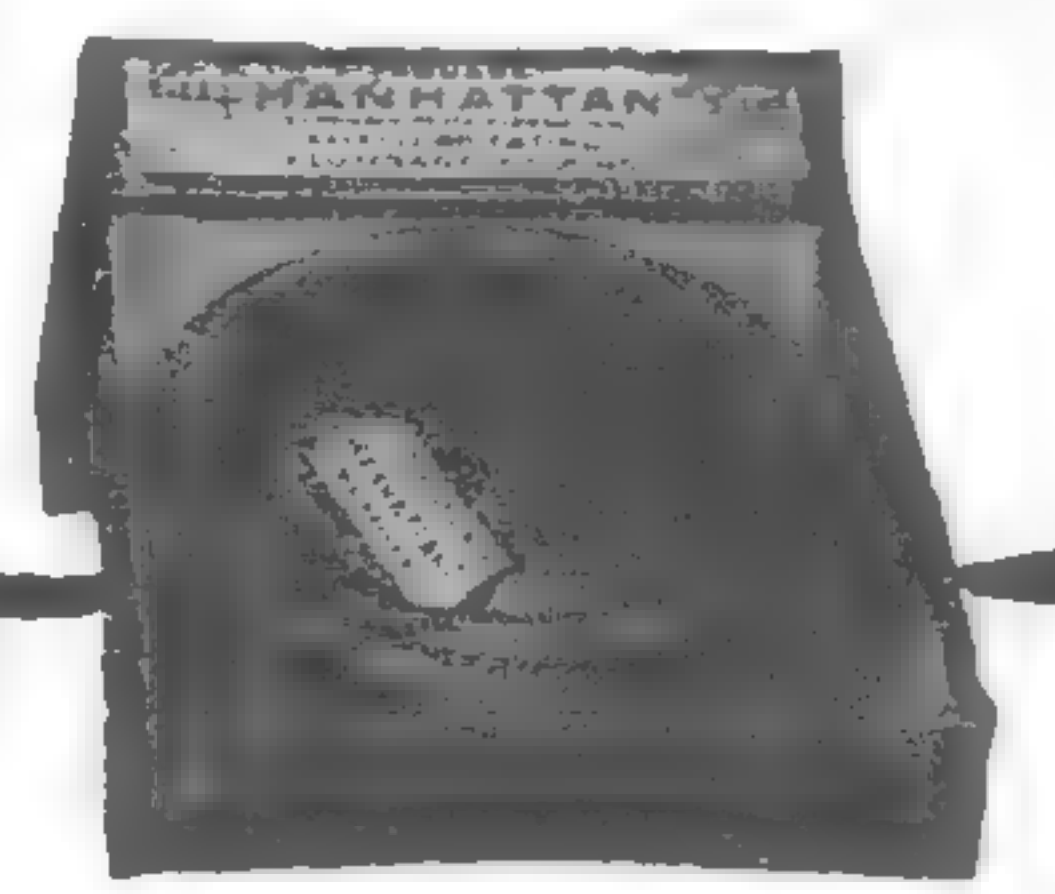
109 Duane Street, New York

TROUBLE IS SAVED AND REAL ECONOMY IS SECURED

by using the packing that has the
quality that gives long service in each
particular service.



For LOW STEAM PRESSURES
below 100-lbs., and hy-
draulic pressures use
"MANHATTAN" packing.



Let us send you this Guide Book on the
real economy in the use of packing.

These packings obtainable
through usual trade channels.

CLASSIFICATION OF ELECTRICAL APPARATUS AND SUPPLIES

Manufactured by MEMBERS OF THE ELECTRICAL MANUFACTURERS EXPORT ASSOCIATION OF THE U.S.A., INC.

MOVING PICTURE—Apparatus—Incandescent Adapter for Arc Projector;
Current Regulator; Projection Screen.
OPENERS—Electric Door.
PAINTS—Insulating.
PAPER—Insulating, Press-board, Fuller-board.
PANEL BOARDS—Switch and Fuse for Power and Light.
PINS AND BRACKETS—See Pole Line Hardware.
PIPE TAPPING and Cutting Machines for Water Works.
PLATES—For Push Switches and Receptacles.
PLIERS—Wire Cutting.
PLUGS—Attachment; Fuse.
PLUMBING REPAIR GOODS—Brass and Rubber.
POLE LINE HARDWARE—Wood and Steel Standard and Special Equip-
ment, High and Low Tension; Power, Light, Telephone, Trolley.
PORCELAIN—Standard and Special Lines, High and Low Tension.
PUMPS—Portable Trench—Motor, Engine and Hand Driven.
PUSH BUTTON—Standard Brass or Wood; Weatherproof, Marine.
RADIUM and Luminous Materials.
RACKS—Cable for Overhead and Underground.
RAILWAY MATERIALS—Pole Line and Track Equipment.
RADIATORS—Electric.
RANGES—Electric.
RECEPTACLES—Flush, Surface; 2 and 3 Pole; Power and Light; Marine;
Floor Box; Vapor Proof.
RECTIFIERS—Battery Charging.
REFLECTORS—Glass; Metal, Porcelain Enameled and Painted.
RHEOSTATS.
SAWS—Hack Saw Blades.
SCREWS—Machine.
SCREW DRIVERS and Electricians' and Linemen's Hand Tools.
SHADES—Brass, Copper, Steel, Tin.
SIGNALS—Plug and Receptacle; Hospital; Hotel.
SIGNS—Electric.
SLEEVING—Cotton, Asbestos, Silk, Mica, Paper.
SOCKETS—Ediswan Edison Screw Base, Mogul, Miniature, Pull Chair,
Key and Keyless, Porcelain, Brass.

STARTERS—Motors, A.C. and D.C.
SWITCHBOARDS and Panels—Standard and Special, Power and Light,
High and Low Tension.
SWITCHES—Battery Disconnecting, Fixture, Knife, Remote Control,
Safety, Tank, Time, Push, Snap, Tumbler, Watertight.
TACHOMETERS.
TAPE—Insulating, Friction, Cotton, Silk, Linen.
TAPS—Current.
THIRD RAIL EQUIPMENT—Complete Equipment for Electric Railway.
TELEPHONES—Intercommunicating.
TOASTERS—Electric Table.
TOOLS—Hand, Linemen's and Electricians', Railway Track Tools,
Water Works Equipment.
TORCHES and Furnaces—Soldering.
TRANSFORMERS—High and Low Tension—All Sizes; Instrument.
TROLLEY LINE MATERIAL—Hangers, Brackets, Insulators—Catenary
and Direct Suspension.
TROLLEY POLE ACCESSORIES—Complete Equipment.
TUBES—Fibre, Mica, Paper, Porcelain, Varnished Fabric, Porcelain.
TUBING—Bergman, Mica, Paper, Fibre, Porcelain, Cotton.
TUNGSTEN—Wire, Acid-Bars.
TWINE—Armature Winding.
VACUUM CLEANERS—Stationary and Portable, Motor Driven.
WASHERS—Clothes; Bank Notes; Hand and Motor Driven; Dish.
WATT-HOUR METERS.
WAX AND COMPOUNDS—Insulating.
WATER WORKS EQUIPMENT—Material for Pipe Line Construction.
WELDING MACHINES—Arc Welding for Plates, Castings, Rails, Bond-
ing, Cutting, etc., etc.
WELDING SUPPLIES—Arc.
WIRES—Annunciator; Asbestos Covered; Automobile; Bare Copper;
Copper Clad; Fish; Lead Covered; Magnet; Platinum Covered;
Molybdenum; Resistance; Rubber Covered; Telephone; Weatherproof.
WIRES FOR MAKING INCANDESCENT LAMPS—Copper Clad; Tungsten;
Molybdenum—Also Lamp Making Machinery.
WRINGERS for Clothes—Motor Driven, Hand Driven.

FRANK E. WATTS, Inc.,

SALES DEPT.
50 CHURCH STREET
NEW YORK CITY, U.S.A.

THE BLUE FUNNEL LINE

(Ocean Steam Ship Co., Ltd. and China Mutual S.N. Co., Ltd.)

FAST SERVICES:—

Japan, China, Hongkong, Philippines, Straits and Java to Europe via Suez Canal and to New York via Suez and Panama Canals also

Trans-Pacific between Oriental ports and West Coast of N. America.

Agents: **BUTTERFIELD & SWIRE**

CHINA NAVIGATION CO., LTD.

(PASSENGER AND FREIGHT STEAMSHIP SERVICES)

SHANGHAI TO, AND FROM,

Weihaiwei, Chefoo and Tientsin (for Peking)
Hankow, Ichang, Changsha, and Intermediate Yangtze Ports
Hongkong and Canton; Amoy and Swatow; Ningpo; and general Coasting Services.

HONGKONG TO, AND FROM,

Manila, Cebu, and Iloilo
Weihaiwei, Chefoo and Tientsin (for Peking)
Canton; Hoihow, Pakhoi and Haiphong; Bangkok and Singapore.
Shanghai and Yangtze Ports (as above)
Sydney, Melbourne and Australian Ports (Australian-Oriental Line)

Agents: **BUTTERFIELD & SWIRE**

FIRE AND MARINE INSURANCE

FIRE

London and Lancashire Fire Insurance Co., Ltd.
Royal Exchange Assurance Corporation.
Guardian Assurance Co., Ltd.
Orient Insurance Company.
British Traders Insurance Co., Ltd.

MARINE

British and Foreign Marine Insurance Co., Ltd.
Standard Marine Insurance Co., Ltd.
Sea Insurance Company, Ltd.
Guardian Assurance Co., Ltd.

Agents: **BUTTERFIELD & SWIRE**

TAIKOO SUGAR REFINING CO., LTD.

FINEST SUGAR OF ALL GRADES

General Agents: **BUTTERFIELD & SWIRE**

TAIKOO DOCKYARD & ENGINEERING CO. OF HONGKONG, LTD.

SHIPBUILDERS, SHIP REPAIRERS, ENGINE BUILDERS, BOILERMAKERS, ETC.

Agents: **BUTTERFIELD & SWIRE**

BUTTERFIELD AND SWIRE

Hongkong, Shanghai, Nanking, Chinkiang, Wuhu, Kiukiang, Hankow, Changsha, Ichang, Tientsin, Newchwang,
Harbin, Dalny, Tsingtau, Chefoo, Ningpo, Vladivostock, Foochow, Amoy, Swatow, Canton, Yokohama, Kobe.

The Guarantee of Excellence on Goods Electrical



LOOK for this trademark on electric motors, generators, fans, lamps, wiring devices — on everything electrical that you buy. This trademark guarantees reliability and long service. It is the mark of the General Electric Company, the largest manufacturer of electrical products in the world.

General Electric Company products have established this trademark as the Guarantee of Excellence on Goods Electrical.

INTERNATIONAL GENERAL ELECTRIC

Distributors for the
GENERAL ELECTRIC CO.
outside of the United States

COMPANY, INC.

General Sales Offices
120 BROADWAY, NEW YORK
and Schenectady, N.Y.

REPRESENTATIVES IN THE FAR EAST

JAPAN: International General Electric Company, Inc.,
Yokohama: Shibaura Engineering Works, Tokyo;
Tokyo Electric Co., Ltd., Kawasaki.

PHILIPPINES: Pacific Commercial Company, Manila.
DUTCH EAST INDIES: International General
Electric Company, Inc., Soerabaya, Java.

CHINA: Andersen, Meyer & Co., Ltd., Shanghai

General Representative in the Far East outside of Japan: International General Electric Co., Inc., 15 Robison Road, Shanghai

40D-5

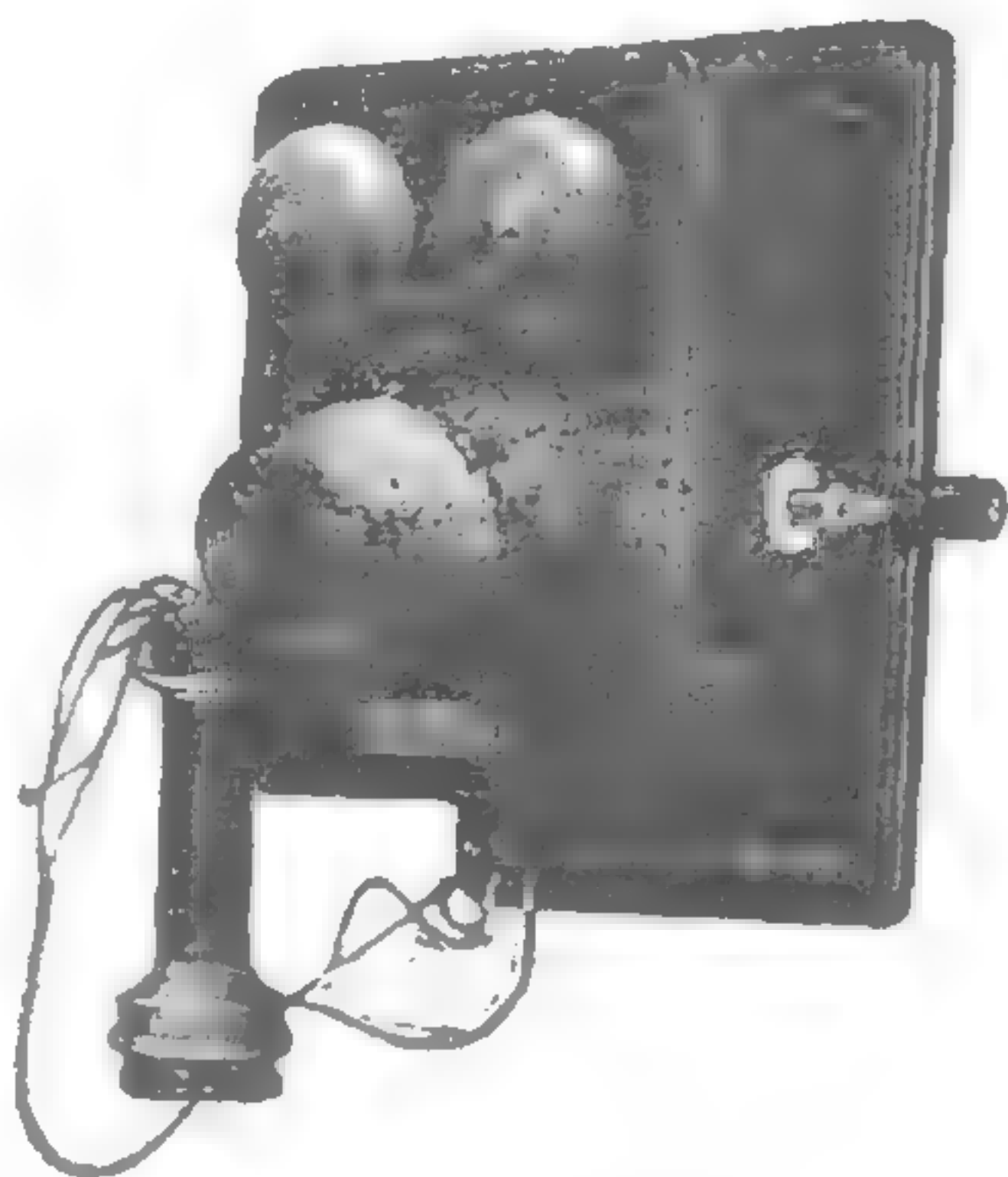
NIPPON ELECTRIC CO., LTD.

TOKYO, JAPAN

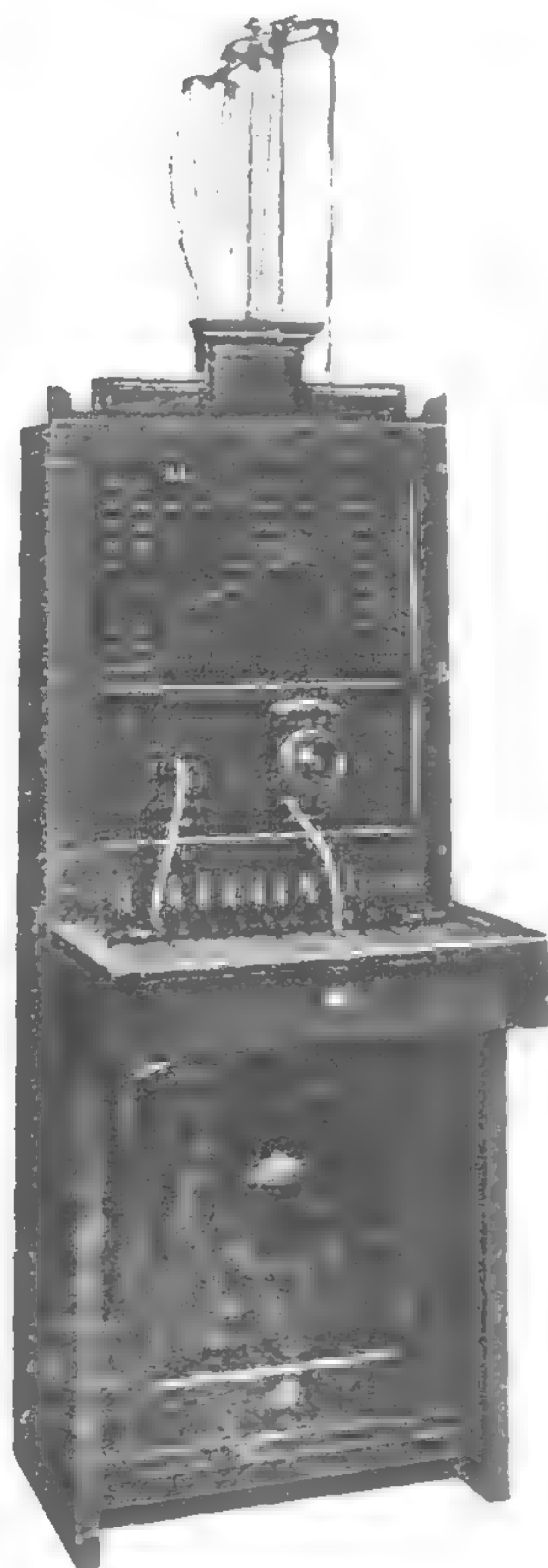
Manufacturers and Suppliers
OF
TELEPHONE APPARATUS

Agents in the Empire of Japan for—

Western Electric Company



No. 8 MAGNETO
WALL TELEPHONE



No. 2101, 100-LINE
MAGNETO SWITCHBOARD



No. 108 MAGNETO
DESK TELEPHONE

Agents in China

CHINA ELECTRIC COMPANY, LIMITED

4 THE BUND, SHANGHAI 4 SHIH CHIA HUTUNG, PEKING

Branch Offices

OSAKA :

30 Kitahama, Nichome, Higashiku.

DALNY :

39 Mikawa-cho.

SEOUL :

16 Minami, Yonekura-cho.

We supply everything for the Telephone Exchange or
Subscribers' Stations



Interior of a Western Electric No. 1317 Wall Telephone. We are in a position to fill all your requirements for Central Battery or Magneto Systems.

CHINA ELECTRIC COMPANY, LIMITED

HEAD OFFICE:

PEKING

4 Shih Chia Hutung

Cable Address: MICROPHONE, Peking

SHANGHAI OFFICE:

4 THE BUND

Cable Address: MICROPHONE, Shanghai

Exclusive Agents in China for

WESTERN ELECTRIC CO., INC.

NEW YORK

NIPPON ELECTRIC CO., LTD.

TOKYO

THE GREEN ISLAND CEMENT COMPANY, LIMITED.

SHEWAN, TOMES & CO.
GENERAL MANAGERS, HONGKONG



Are You Going to Build?

INSIST ON YOUR ARCHITECT SPECIFYING THE USE OF THE BEST BRAND OF PORTLAND CEMENT IN CONSTRUCTION, IF THE HOUSE OR FACTORY IS TO BE BLOCKS OR TILES, THEY SHOULD BE OF CONCRETE, IF STUCCO, ONLY THE BEST CEMENT SHOULD BE EMPLOYED, IF REINFORCED CONCRETE IS USED, ONLY A STANDARD CEMENT WILL STAND THE TEST, IF YOUR BUILDING IS TO BE FIREPROOF, WATERPROOF, SAFE AGAINST EARTHQUAKE OR TYPHOON, IMPROVING WITH AGE, AND LOWERING THE COST OF INSURANCE, YOU MUST EMPLOY CONCRETE, AND THE BEST CONCRETE CONSTRUCTION IS ONLY SECURED THROUGH THE USE OF

Green Island Portland Cement

GREEN ISLAND CEMENT

Is supplied in
BAGS—250 lbs. net
CASKS—375 „
IRON
DRUMS—375 „

Also

GLAZED
STONEWARE,
HOUSE DRAINS,
SEWER PIPES,
AND FITTINGS,
PAVING BRICKS,
TILES,
FIRE BRICKS
AND
FIRE CLAY.



THE SHANGHAI MUTUAL TELEPHONE BUILDING.
(DAVIES & THOMAS, ARCHITECTS)

Green Island Portland Cement Used Exclusively in its Construction

THE GREEN
ISLAND BRAND
HAS BECOME
THE STANDARD
PORTLAND
CEMENT OF ASIA,
OWING TO ITS
PURITY,
UNIFORMITY,
AND TESTS.

USED BY H.B.M.'S
GOVERNMENT
IN HONGKONG,
UNITED STATES
GOVERNMENT
IN THE
PHILIPPINES FOR
ALL IMPORTANT
PUBLIC WORKS.

Also by

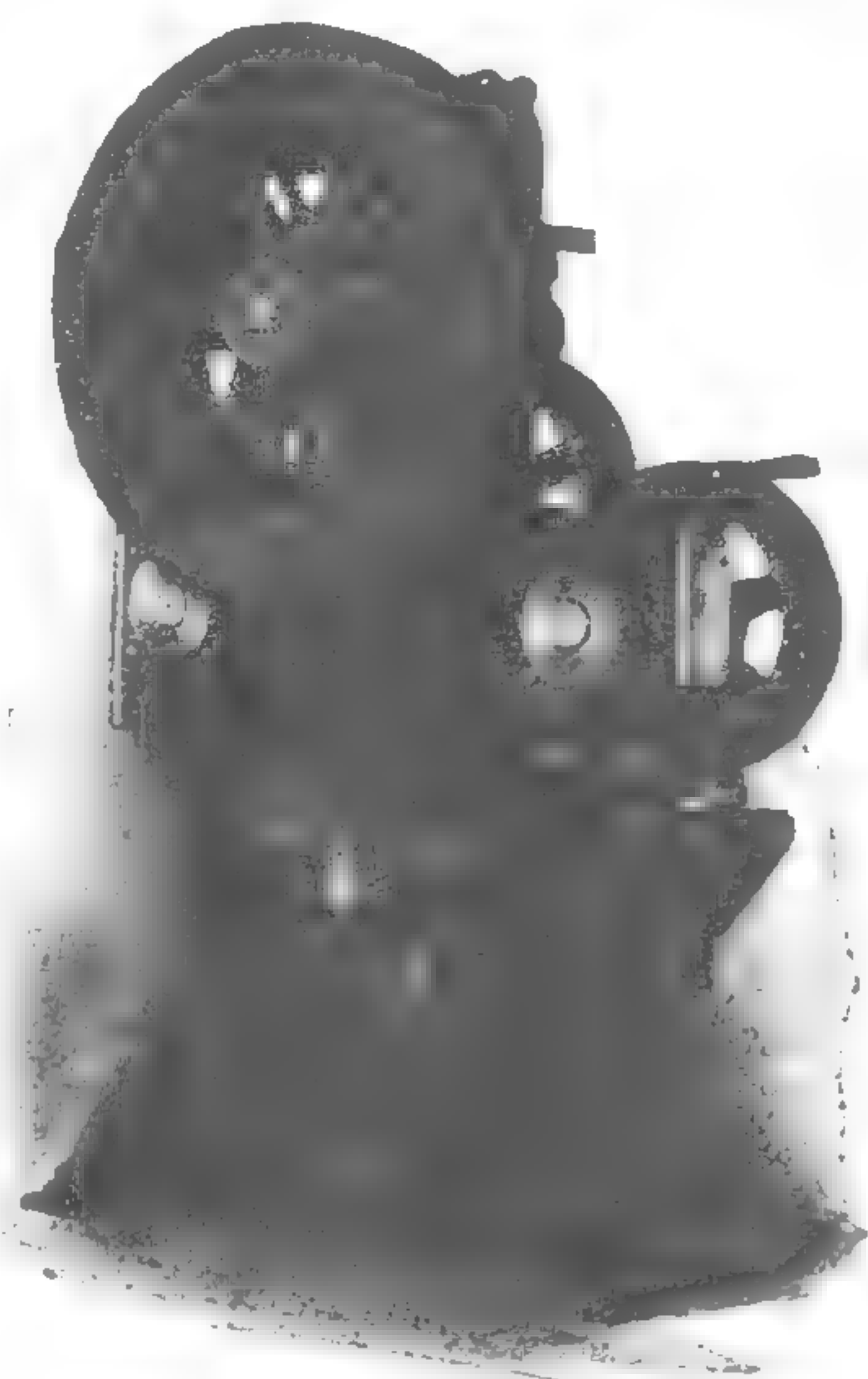
H.B.M.'S
GOVERNMENT
IN SINGAPORE
AND FEDERATED
MALAY STATES
FOR
GOVERNMENT
BUILDINGS,
RAILWAYS AND
HARBOUR
WORKS

RYERSON

Quadruple Combination Punching and Shearing Machine

U. S. and Foreign Patents

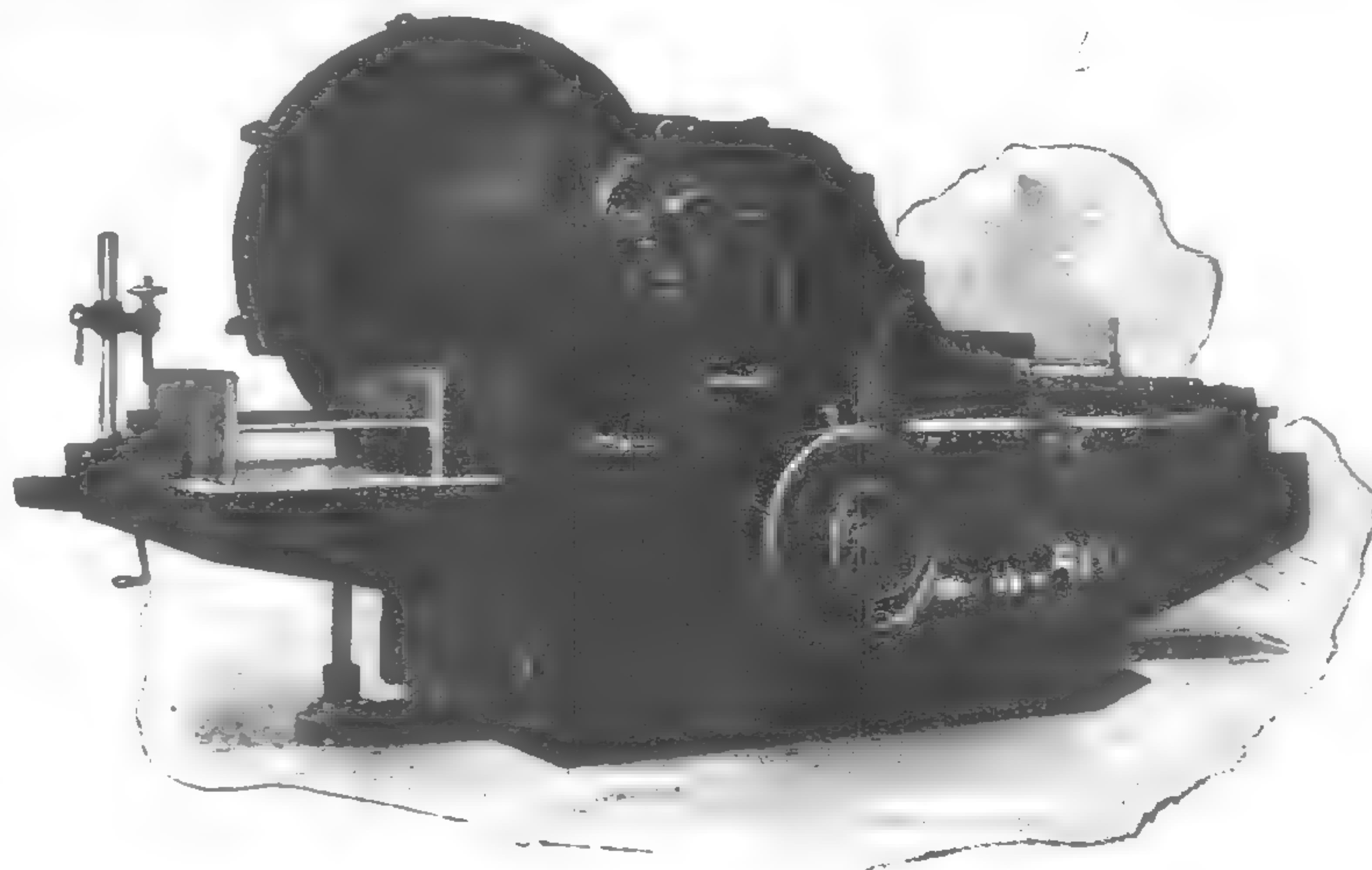
The Ryerson Quadruple Combination Punching and Shearing Machine embodies four single tools in one, handling punching, shearing of plates, round and square bars, cutting of angle and tee iron, as well as coping and notching work. All of this can be done without interchanging the attachments for the various operations or having to maintain a number of single machines for each operation. This machine is furnished arranged for either belt drive or direct motor drive. We also manufacture this type of punch and shear in single units, or in different combinations to meet special conditions.



Ryerson Universal High Speed Friction Saw

U. S. and Foreign Patents

The Ryerson High Speed Friction Saw is designed for rapid cutting of steel shapes of all descriptions. The use of the High Speed Friction Saw in railroad shops and frog and switch shops is a recognized necessity for the efficient and rapid cutting of rails, beams, angles, channels, tees, zeels, round bars, etc., as well as the various special sections which are being employed in steel construction. This saw will cut different shapes in rapid succession without the necessity of interchanging any attachments or clamping the material. A 24" I-beam can be cut in 50 seconds. This saw is made in various sizes, from No. 1 to No. 5, with capacity to cut from the smallest to the largest sections rolled.



Write for complete descriptive bulletin. A bulletin on any particular machine, or a complete catalogue on all Ryerson Machines, will be mailed at your request.

JOSEPH T. RYERSON & SON

NEW YORK
BUFFALO

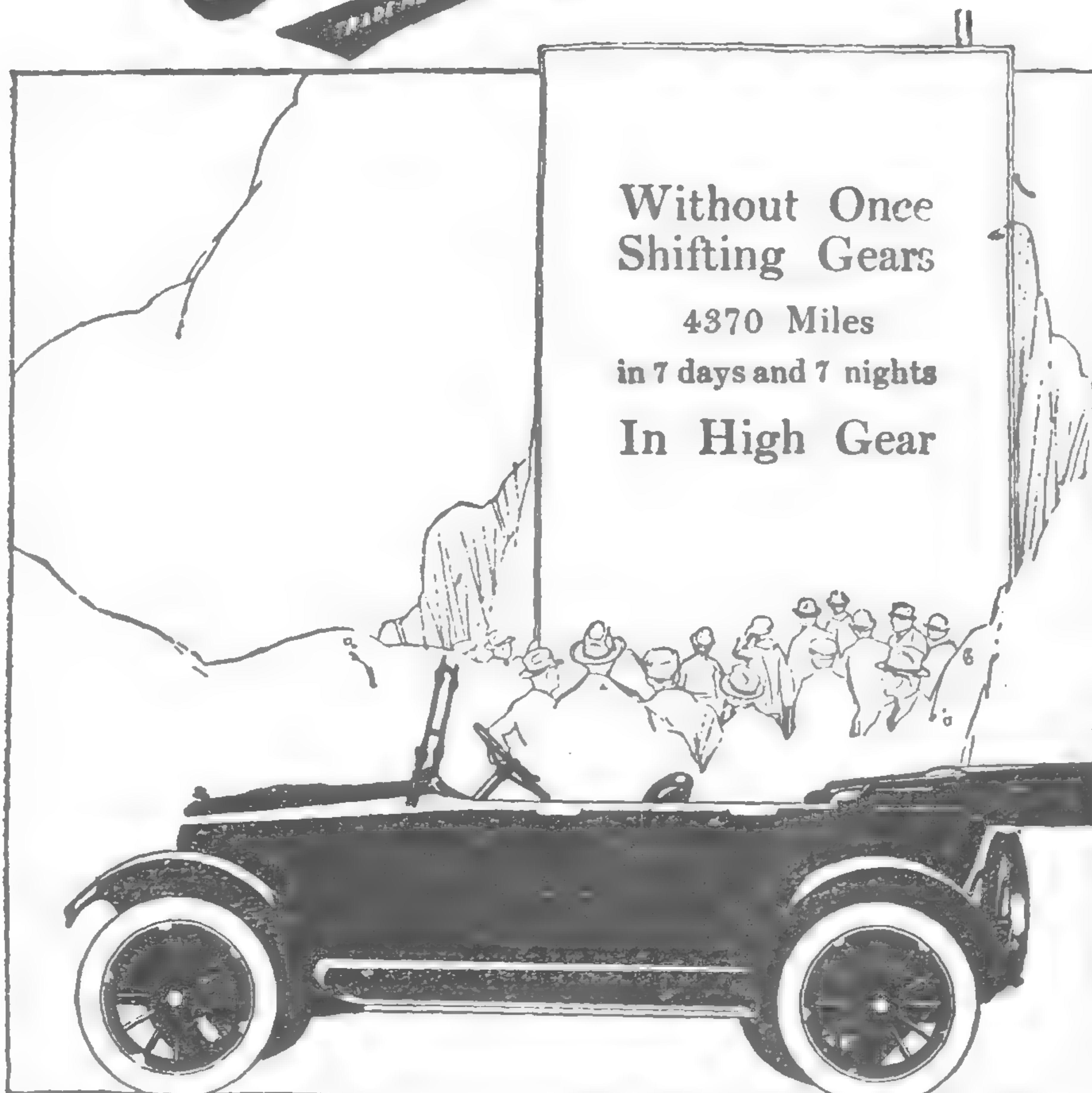
ESTABLISHED 1842
CHICAGO, ILL., U. S. A.

ST. LOUIS
DETROIT

Cable Address: Ryson, Chicago. Telegraphic Codes: Western Union, Lieber's, A. B. C. (5th Edition), Bentley's, Ryerson. Japanese Representatives—Sale & Frazar, Ltd., Tokyo, Japan.

Overland

TRADE-MARK REG.



20.6 Miles per U. S. A. Gallon for 4370 Consecutive Miles

That is a record-breaking performance of a Model 90 Overland Motor Car. For economical long-time fuel consumption, this record—recently made in a test conducted in the state of Oklahoma, United States of America, is unapproached.

And the fact that this mileage was accomplished with gears sealed in "high" and without an engine stop for a solid week (day and night) speaks wonders for the mechanical perfection of the Model 90.

The 175,000 owners of Model 90's are proud of its unfailing performance—proud of its splendid appearance.

And the appreciation of these owners is of far more significance than a recital of specifications. Model 90 will meet your every requirement.

THE JOHN N. WILLYS EXPORT CORPORATION
165 Broadway, New York, U. S. A.

THE CENTRAL GARAGE COMPANY

2A JINKEE ROAD

PHONE CENTRAL 3809

TRADE MARK

REGISTERED

1878 - PATENTED - 1910

BLASTING

As strong as 'A 1' Dynamite
Two Ingredients { Solid
 Liquid
Shipped in separate packages
Non-explosive BEFORE mixing
NO EXPENSIVE MAGAZINE NECESSARY
Store in any dry place
Safer to handle AFTER mixing,
than any other powder
Packed in cloth cartridges,
3/4" to 2" diam. X 6 1/2" to 8" long.

POWDER

RENDROCK POWDER CO.
106 Wall Street,
NEW YORK, U.S.A.

ESTABLISHED 1910
INCORPORATED 1912

CABLE ADDRESS "AMIRON"
ALL CODES USED

AMIRON
BRAND

EXPORTERS OF IRON AND STEEL

Steel and Iron Bars	Angles	Beams and Channels
Boiler Tubes	Car Axles	Concrete Bars
Steel Castings	Cut Nails	Bolts and Nuts
Galvanizing	Hoops and Bands	Gears
Steel and Iron Plates	Wire Nails	Steel and Iron Pipe
Spring Steel	Soil Pipe	Galvanized and Black Sheets
	Rails, Heavy and Light	
Spliced and Angle Bars		Railroad Spikes
Rivets		Boat Spikes
Tin Plate	Shafting	Tool Steel
Valves	Staples	Wire Rope
Barb Wire		Galvanized Wire
	Annealed and Nail Wire	
Mattress Wire		Structural Tubing

AMERICAN IRON PRODUCTS CO., INC.
107 LIBERTY STREET, NEW YORK, N. Y., U. S. A.
BRANCH OFFICES
Obispo 59-61, Havana, Cuba Bouret Bldg, San Juan, P. R. Cascilla 1539,
Santiago, Chile 159 Calle Veinticinco de Mayo, Buenos Aires, Argentina
318 Kneeder Bldg., Manila, P. I., Water St., St. Johns', Newfoundland

DAVID BROWN, Junr.
62 ROBERTSON STREET, GLASGOW

Acids : Acetic Benzoic Carbolic Cresylic Hydrochloric Sulphuric Alum Alum Sulphate Ammonia (liquor and refined) Asphalt Basic Slag Benzol Bricks (Fireclay and Silica) Cattle Washes Caustic Potash Caustic Soda Coal Tar Copper : Acetate Iodide Nitrate Sulphate	Cresols Disinfectant Fluids Disinfectant Powders Dry Felt Fibre Glucose Glycerine Hair (manufactured) Lubricating Greases Molasses Motor Spirit Naphthas Naphthalenes Oils : Anthracene Blastfurnace Creosote Coal Tar Creosote Essential Fuel Fusel Fish Gas	Oils : Green Lubricating Paraffin Petroleum Whale Paints Pitches Red Lead Resins Sheep Dips (liquid, paste and powder) Soaps (hard and soft) Sulphate of Ammonia Sulphate of Alumina Tar Terneplates Tinplates Toluol Varnishes Waxes
--	--	---

FUEL OILS FOR ALL PURPOSES.

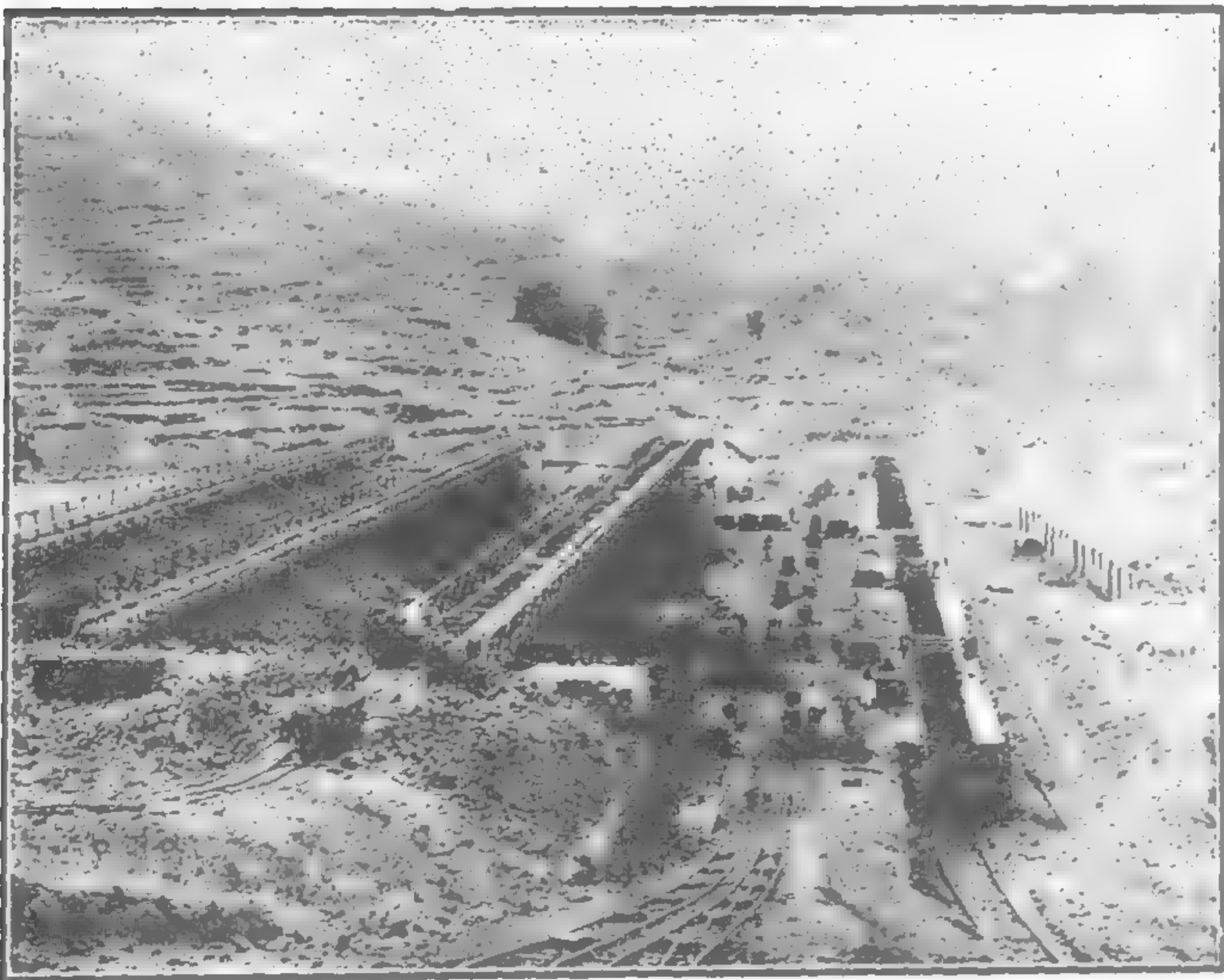
TERMS OF PAYMENT ARRANGED TO SUIT BUYERS' CONVENIENCE.
Telegraphic & Cable Address: "OLYMPIC, GLASGOW."
Codes: A.B.C. 5th & Privates.

司公限有礦廠鐵煤萍冶漢
THE HAN-YEH-PING IRON AND COAL CO., LTD.



GENERAL VIEW OF HANYANG IRON AND STEEL WORKS

Incorporating The Hanyang Iron & Steel Works, The Tayeh Iron Mines, The Pinghsiang Colliery.



THE TIEHSHAN MINE AT TAYEH



PARTIAL VIEW OF THE PINGHSIANG COLLIERY

PRODUCERS OF High Percentage Iron Ores, Limestones, and Dolomite. **PRODUCERS OF** The Pinghsiang Steam Coal, and Pinghsiang Coke.

MAKERS OF Railway Materials including Rails, Fishplates, Dog Spikes, and Bolts and Nuts.

SUPPLIERS TO the Principal Government and other Railways in China.

MANUFACTURERS OF Structural Steel Materials including Steel Plates, Joists, Channels, Equal and Unequal Angles, Rivets, etc. etc.

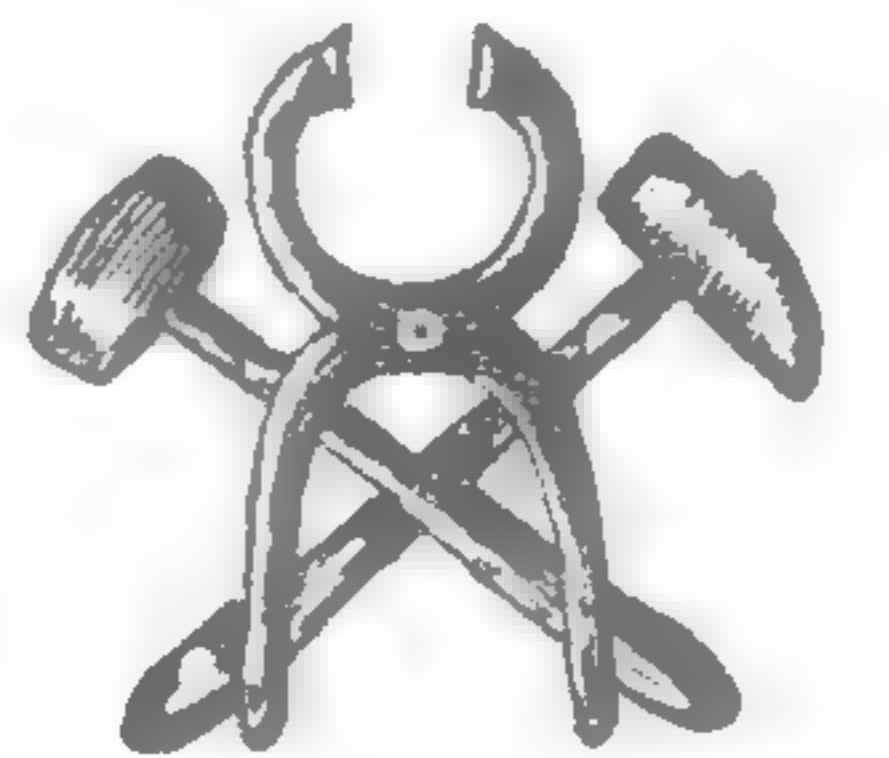
PRODUCERS OF Pig Iron, both Basic and Foundry, Steel Ingots, Blooms and Billets. Steel Flat, Round, and Square Bars.

Catalogue will be sent free on request to

HEAD OFFICE: 36 Szechuen Road, SHANGHAI.

Telegraphic Address: "HANSTEEL," Shanghai.

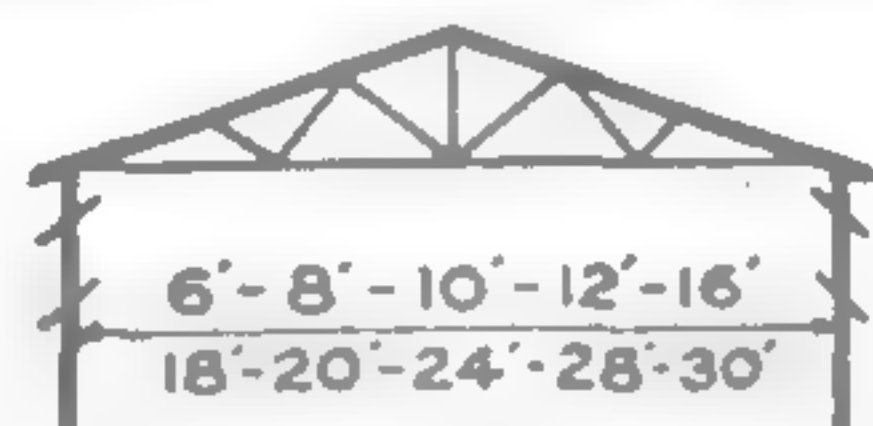
Codes Used: A.B.C. 5th Edition; Bentley, Engineering 2d Edition; & Western Union.





WIDTHS OF TRUSCON STANDARD BUILDINGS

Any Length of Building varying by 2 ft.
Wall Heights, curb to eave, 7'-10" or 11'-6"



TYPE 1 (Clear Span) BUILDINGS

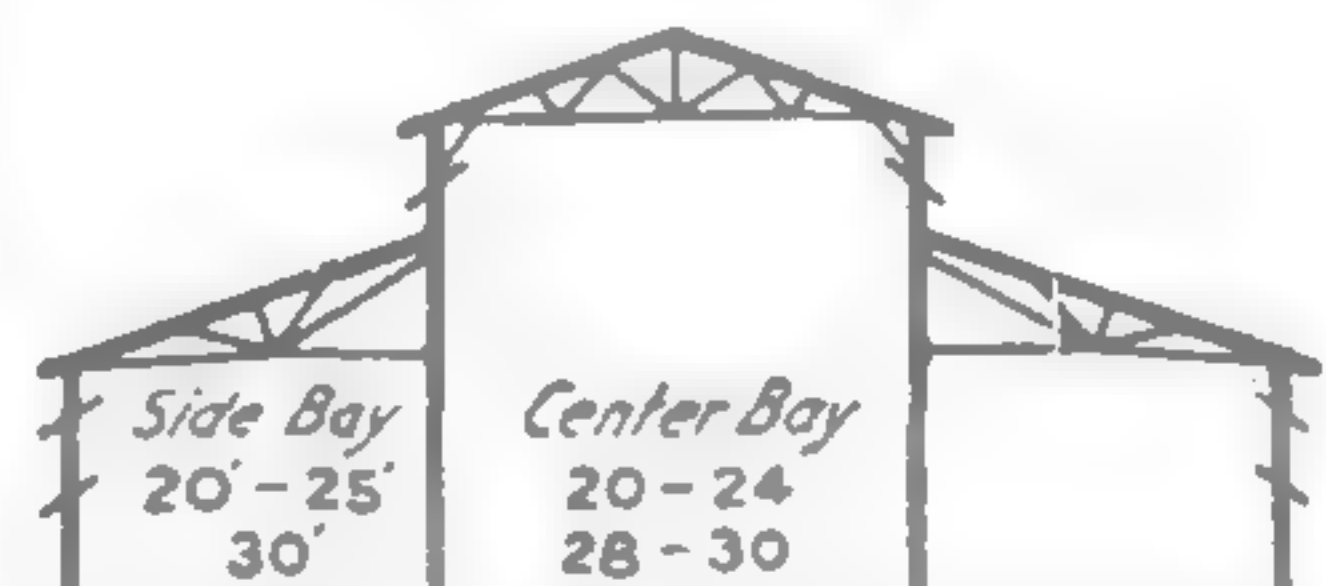


TYPE 2 (Two Bay) BUILDINGS
One Row of Columns in Center



TYPE 3 (Three Bay) BUILDINGS
Two Rows of Columns in Interior

Widths - 50' 52' 56' 58' 60' 64'
68' 70' 74' 78' 80' 84' 90'



TYPE 3M (Monitor) BUILDINGS

Widths - 60' 64' 68' 70' 74'
80' 84' 90'



TYPE 4 (Four Bay) BUILDINGS
Three Rows of Columns in Interior

Widths - 80' (4 Bays @ 20')
100' (4 Bays @ 25')

CONTINUOUS MONITOR 12'-0"
WIDE CAN BE PROVIDED AT
RIDGE OF ANY BUILDING

Buildings of Myriad Uses

If you need a permanent building, and want it to meet future requirements which cannot be foreseen, you should consider the use of a Truscon Steel Building. Their cost is less than that of other types of permanent construction. They are being used extensively by the largest industries, and give admirable service as factories, warehouses, hospitals, machine-shops, etc.

Truscon Standard Buildings are strong, durable, fireproof, being entirely of steel. They are made up of unit panels rigidly combined by an improved locking device. All panels, including doors and windows, are interchangeable, so that buildings can be enlarged or rearranged, or taken down and re-erected in a new location without loss. Furnished in any desired arrangement of doors and windows in any length, various heights and widths up to 100-ft.

Write us for suggestions, and for free copy of our catalog of Truscon Standard Buildings.

TRUSCON
STANDARD BUILDINGS

TRUSCON STEEL CO.,
Foreign Trade Department
No. 2 Rector St.,
New York, N.Y., U.S.A.

AGENTS:

Wm. H. Anderson & Co.,
Plaza Santa Cruz, Manila, P.I.

American Trading Co.,
53 Szechuen Road, Shanghai, China.

American Trading Co.,
1 Itchome Yurakucho, Kojimachi-Ku,
Tokyo, Japan.

American Trading Co.,
99 Kitamachi, Kobe, Japan.

United Engineers, Ltd.,
Singapore, Straits Settlements.

British American Machinery Co., Ltd.,
Mercantile Buildings, Lall Bazar St.,
Calcutta, India.

McKenzies' Saw Mills, Ltd.,
Siwri, Bombay, India.

John Chambers & Son, Ltd.
(Chemical Products only),
Auckland, New Zealand
Dunedin, " "
Wellington, " "
Christchurch, " "

Lindeteves Stokvis,

Dutch East Indies—

Semarang	Tegal	Medan
Soerabaya	Djorjakarta	Makassar
Batavia	Bandoeng	

C

O

A

L

FU CHUNG CORPORATION

Has the exclusive Selling Rights of the well-known

HONAN ANTHRACITE COAL

produced at the Mines of

THE PEKIN SYNDICATE, LIMITED

AND

THE CHUNG YUAN COMPANY, LIMITED

Interior Agencies Established at All Important Towns Along the

Kin-Han Railway. Tao-Ching Railway.

Lung-Hai and Pien-lo Railway. Yellow River.

Wei River and Grand Canal

and All Accessible Trade Centres Throughout HONAN and Adjacent Territory.

Depôts established at Paotingfu, Peking, Tientsin, Hankow,

Nanking and Shanghai.

The HONAN ANTHRACITE COAL is the BEST domestic Fuel produced in China. It is Smokeless, Free from Smell, very Durable, and Burns with an Intense Heat.

THE BEST COAL FOR OPEN FIRE GRATES

THE BEST COAL FOR STOVES OF ALL KINDS

THE BEST COAL FOR STEAM HEATERS

The specially prepared Boiler Coal is the best, cheapest, and most economical in consumption, of all steam-raising Fuels on the Market for Factories and Steamers whose Boilers are provided with Mechanical Draught.

Present Sales over 1,200,000 tons per annum.

All inquiries addressed as under will receive prompt attention.

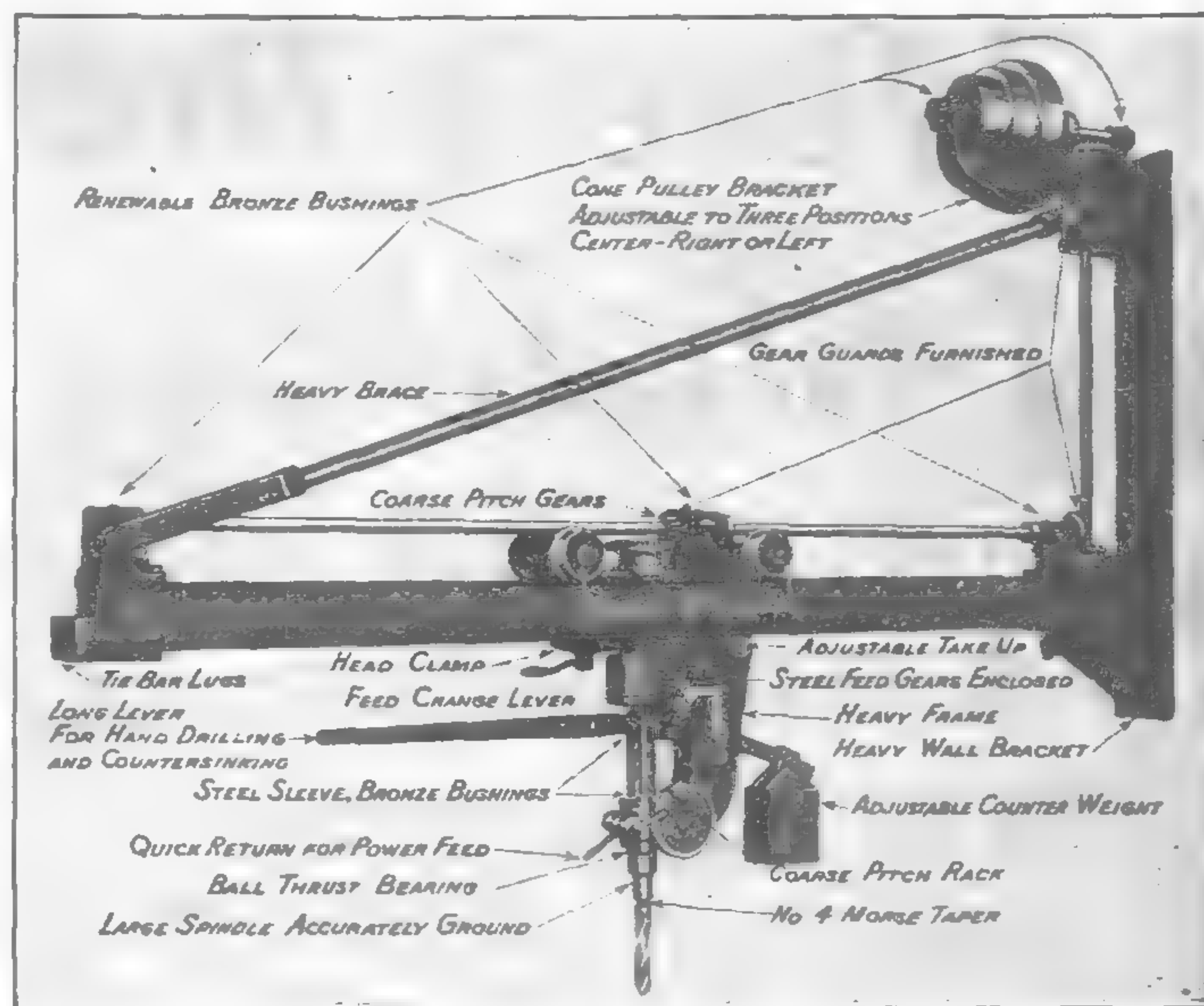
The General Managers,
Head Office, Chiaotso, Honan.

Telegraphic Address:
"Fuchung" Chiaotso.

Customers are Satisfied

with the performance of this machine in their works. A recent letter to us stated—"Regarding the WALL RADIAL DRILL this is operating every day, and we are more than pleased with the RESULTS we are getting from the use of this tool. In all probabilities we will install additional ones later on." Speaks well for the machine, doesn't it?

Our detailed bulletin will interest you, as it covers the description of the machine fully.



LYND-FARQUHAR CO.

Boston, Mass., U. S. A.

MADE IN FOUR STANDARD SIZES

Rated size	Drills to centre of	Wall to end of arm
7-ft.	14-ft. circle	10-ft.
9-ft.	18-ft. circle	12-ft.
11-ft.	22-ft. circle	14-ft.
13-ft.	26-ft. circle	16-ft.

Other lengths of arm to suit requirements.

STEEL

TINPLATE BARS.
SHEET "
SPRING STEEL "
BLOOMS.
BILLETS.
SLABS.
FLATS.
SLEEPERS.



STEEL

LIGHT RAILS
HEAVY "
FISHPLATES.
PLATING BARS.
DIAMETER "
ANGLES.
CHANNELS.
TEES.

The Ebbw Vale Steel Iron and Coal Co., Ltd.

(Joint Proprietors of John Lancaster & Co.'s Griffin Nantyglo, Powell's Tillery and Powell's Navigation Steam Coals).

STEEL SHEETS, Black and Galvanized, Plain and Corrugated.

Makers of SPECIAL STEEL PANEL PLATES hydraulically flattened and resheared to exact dimensions. Other STEEL SHEETS to Special Analyses. Brands: "E.V." "Furnaces," "Napoleon."

**WELDLESS STEEL TUBES FOR LOCOMOTIVE BOILERS.
STANDARD SIZES AND GAUGES. WELDLESS COUPLINGS.**

SUNDRIES

CARRIAGE SPRINGS.
WAGON "
LOCOMOTIVE "
INGOT MOULDS.
GENERAL CASTINGS
(UP TO 40 TONS).
WELDLESS STEEL
TUBES. WELDLESS
COUPLINGS. WAGONS.

Carriage, Wagon and Locomotive Springs to Railway Standard and other Specifications.

BEST QUALITY TAR, and Sulphate of Ammonia produced by Direct Recovery Process.

Coal Output Capacity	...	...	...	3,500,000 Tons per annum.
Pig Iron "	"	...	...	300,000 "
Steel "	"	...	...	250,000 "

(Bessemer & Siemens Acid and Basic.)

Brick Output Capacity 20,000,000 per annum
(Buff and Red Facings, Fire, Common and Ornamental.)

EBBW VALE

STEAM
AND
ABERCARN
BLACK VEIN
COAL.

THE EBBW VALE STEEL IRON AND COAL COMPANY, LIMITED.

EBBW VALE, MON., ENGLAND.

London Office: 122 Cannon St., E.C.4.

BRITISH AGENCIES: Birmingham, Liverpool, Glasgow, Newcastle-on-Tyne, Swansea, Cardiff, Newport, etc.
COLONIAL AND FOREIGN AGENCIES: South Africa, Australia, New Zealand, Canada, South America, France, Holland, etc.

Here's the Polish!

TO use Johnson's Prepared Wax you need only a cloth—no brushes, sprays nor mops of any kind. With very little rubbing you can produce a lustrous, lasting polish of great durability.



You can use Johnson's Prepared Wax over any finish, whether varnished, French-polished or oiled, and the result will be a hard, dry, velvety polish impervious to water, dust, scratches, heel-marks and finger-prints.

JOHNSON'S PREPARED WAX

Liquid and Paste

is more than a polish, for it forms a thin protecting film which serves as a wonderful preservative.

Johnson's Powdered Wax

Sprinkled over any floor will immediately give a perfect dancing surface.

Your dealer will be glad to supply you with this most satisfactory polish.

S. C. Johnson & Son
Racine, Wisconsin U. S. A.

SUMITOMO GENERAL HEAD OFFICE AND
THE SUMITOMO BANK, LTD.



OWNERS OF BESSHI COPPER MINES, ETC.

Manufacturers of

Tubes, Plates, Sheets and Bars of
Copper, Brass, Bronze and other Cop-
per Alloys, Electric Wires and Cables,
Artificial Fertilizer, etc., etc.

WORKS AND DEPARTMENTS

General Head Office	Osaka
Besshi Copper Mine	Niihama, Iyo
Copper Sales Dept.	Kobe
Warehouses	Osaka, Kobe and Tokyo
Wakamatsu Coal Dept.	Wakamatsu, Chikuzen
Copper Works	Osaka
Electric Wire and Cable Works	Osaka
Fertilizer Manufactory	Niihama, Iyo
Sapporo Mine Office	Sapporo
Tokyo Sales Dept.	Hiramatsucho, Tokyo
Kure Sales Dept.	Kure near Hiroshima
The Sumitomo Yoko	Shanghai
The Sumitomo Yoko	Hankow
The Sumitomo Yoko	Tientsin
The Sumitomo Bank, of Hawaii	Honolulu

THE SUMITOMO STEEL WORKS, LTD.

OSAKA, JAPAN

President: BARON K. SUMITOMO

Managing Director: Y. YAMASHITA, Esq.

Manufacturers of

STEEL INGOTS, STEEL FORGINGS, STEEL & IRON CASTINGS
of every description for

RAILWAYS, SHIP-BUILDING YARDS, MINES, HYDRAULIC,
ELECTRIC AND OTHER ENGINEERING WORKS, ETC.



THE SUMITOMO STEEL WORKS, LTD.

The Firm of Sumitomo

BESSHI COPPER MINE, SHISAKA, IYO PREFECTURE



THE SUMITOMO BANK, LTD.

OSAKA, JAPAN

Cable Address: "SUMITBANK"

Established March, 1912

(Successors to the Sumitomo Bank)

Subscribed Capital	Yen 80,000,000
Paid-up Capital	28,250,000
Reserve Fund	4,600,000

President:

BARON K. SUMITOMO

Managing Directors:

K. YUKAWA, Esq.	S. YOSHIDA, Esq.
T. KANO, Esq.	N. YATSUSHIRO, Esq.

Branches:

TOKYO, YOKOHAMA, NAGOYA, KYOTO, KOBE, HYOGO, ONOMACHI,
NISHAMA, KURE, HIROSHIMA, YANAI, SHIMONOSEKI, MOJI,
WAKAMATSU, HAKATA, KURUME, SHANGHAI, HANKOW, BOMBAY,
LONDON, NEW YORK, SAN FRANCISCO, SEATTLE, ETC.

Agents:

Lloyds Bank, Limited, London.
National City Bank of New York, New York.
The Sumitomo Bank of Hawaii, Honolulu.

Correspondents in all important places at home and abroad.

SULLIVAN DIAMOND CORE DRILLS



Sullivan Bravo Diamond Drill, operated by Coolies, North China.

For Accurate Mineral Prospecting

A set of diamond drill cores is the surest evidence you can get as to the extent and value of your ore deposits, and will enable you to count as "Ore in sight," what would otherwise be "estimated reserves."

Enterprising mines everywhere use Sullivan Diamond Drills for investigating their deposits, not only to appraise values, but to determine the best and cheapest method of development.

Sullivan Drills are always in stock—for surface or underground, angle or vertical drilling; for drilling 50 feet or a mile deep; for cores one inch to six inches thick; for hand, steam or air.

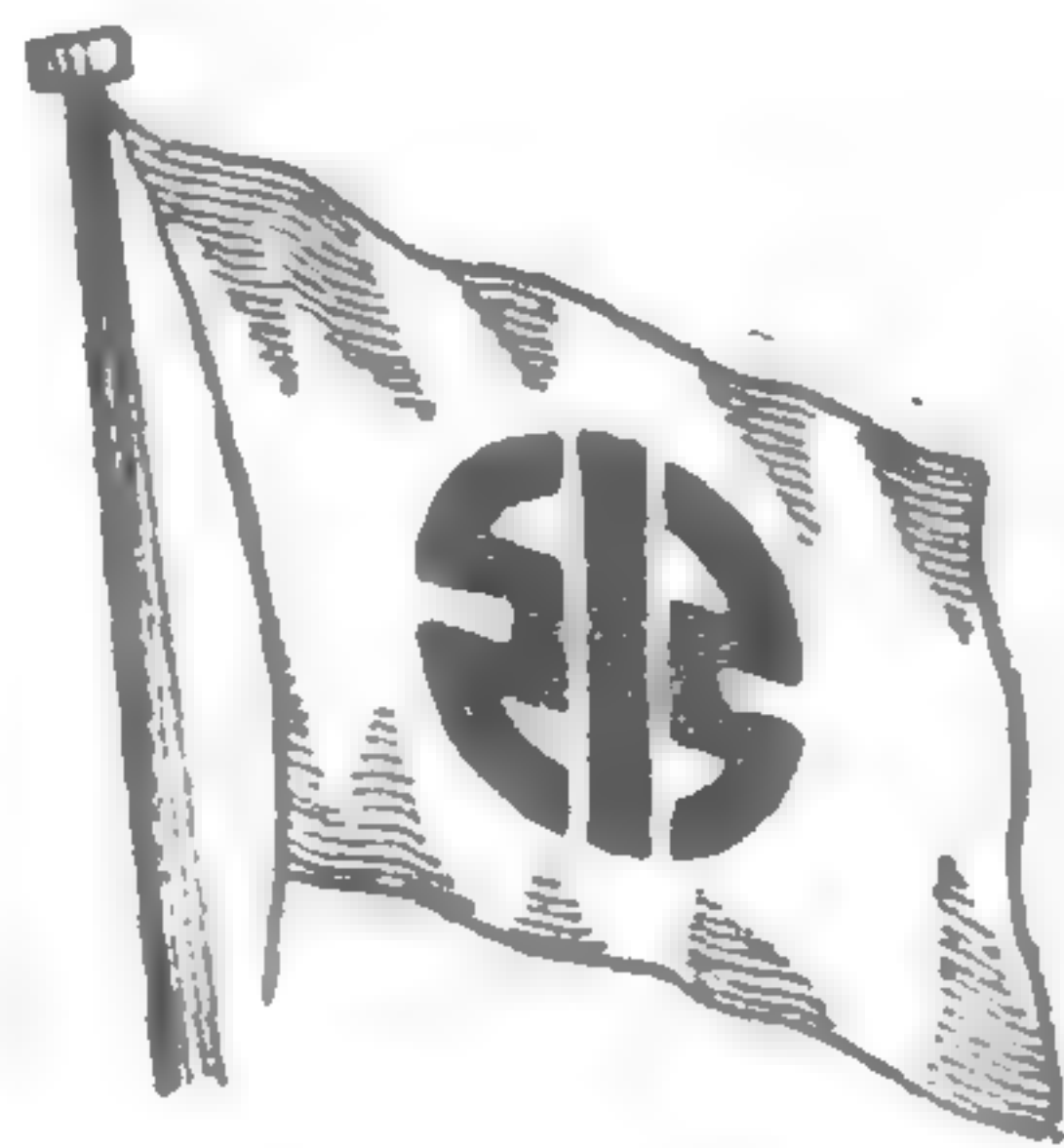
SULLIVAN MACHINERY COMPANY

(Established 1850) CHICAGO, U.S.A.

Agents for China: ANDERSEN, MEYER & CO., LTD., Shanghai, Peking, Tientsin, Hankow, Tsinan, Harbin, Hongkong, Kalgan, Canton, Changsha, Urga, Vladivostock, Yunnanfu.

Agents for Japan: MITSUI & CO., LTD., Tokyo, Osaka, Yokohama.

Kawasaki Dockyard



*Contractors to the Imperial Japanese Army and Navy and
to Foreign Governments*

KOBE

Cables Address: "DOCKYARD, KOBE."

SHIPBUILDERS, ENGINEERS AND REPAIRERS.

Sole Makers of Curtis Marine Steam Turbines, etc.

NINE SHIPBUILDING BERTHS AND GRAVING DOCK

Powerful Salvage and Towing Boat will be supplied at Short Notice.

One 200-ton Floating Crane and Cranes of Medium Capacity.

Union Station, Kansas City, U.S.A.
Armco Iron used for heating and ventilating system.

Build with
RUST-RESISTING

ARMCO
IRON

AND
for Permanence

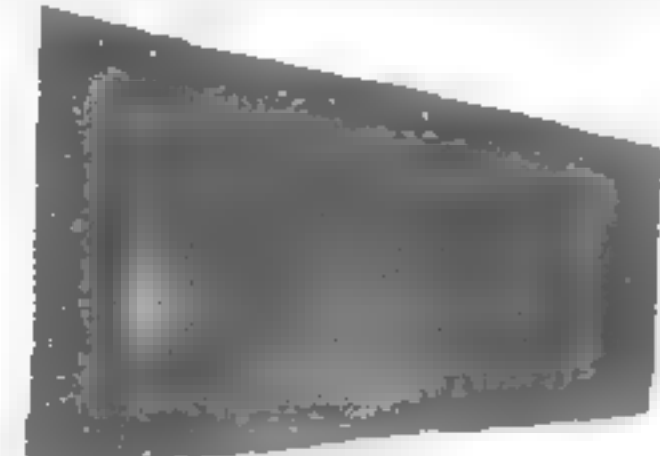
Deshler Hotel, Columbus, U.S.A.
All metal window frames of
Armco Iron.

Haas Building, St. Louis, U. S. A.
Armco Iron window frames
throughout.

10 Gauge
Armco Iron
Blue Annealed
Sheets



Armco Iron Sheets



Black and Galvanized

Armco Iron
Corrugated
Sheets



Hotel Orlando, Decatur, U.S.A.
All sheet metal work of
Armco Iron

Write for Particulars and Prices.

THE AMERICAN ROLLING MILL CO.

Armco Iron Culverts, Flumes, Sheets, Roofing, Metal Lath and other building products.
Licensed manufacturers under patents granted to the International Metal Products Co.,
MIDDLETOWN OHIO, U. S. A.

Cable Address: "ARMCO" Middletown (Ohio)

Armco Agents:

The Chinese-American Co., Shanghai
The Atlantic Gulf & Pacific Co., Manila

Messrs. Bryner & Co., Vladivostok
Messrs. Borneo Co., Ltd., Singapore

The Bangkok Dock Co., Ltd., Bangkok
Messrs. Louis Ogilvie & Co., Saigon

London Agents
GRACE BROTHERS & Co., Ltd.

San Francisco
332 PINE STREET

New York
HANOVER SQUARE

W. R. GRACE & Co.

CABLE TRANSFERS

CABLE ADDRESS

LETTERS OF CREDIT

"GRACE"

ANY COMMERCIAL CODE

CHILE

SEATTLE
LOS ANGELES
NEW ORLEANS
HAVANA

ECUADOR
COLOMBIA
VENEZUELA
PANAMA

PERU

GUATEMALA
COSTA RICA
SALVADOR
NICARAGUA

BOLIVIA

BRAZIL
ARGENTINE
URUGUAY
PORTO RICO

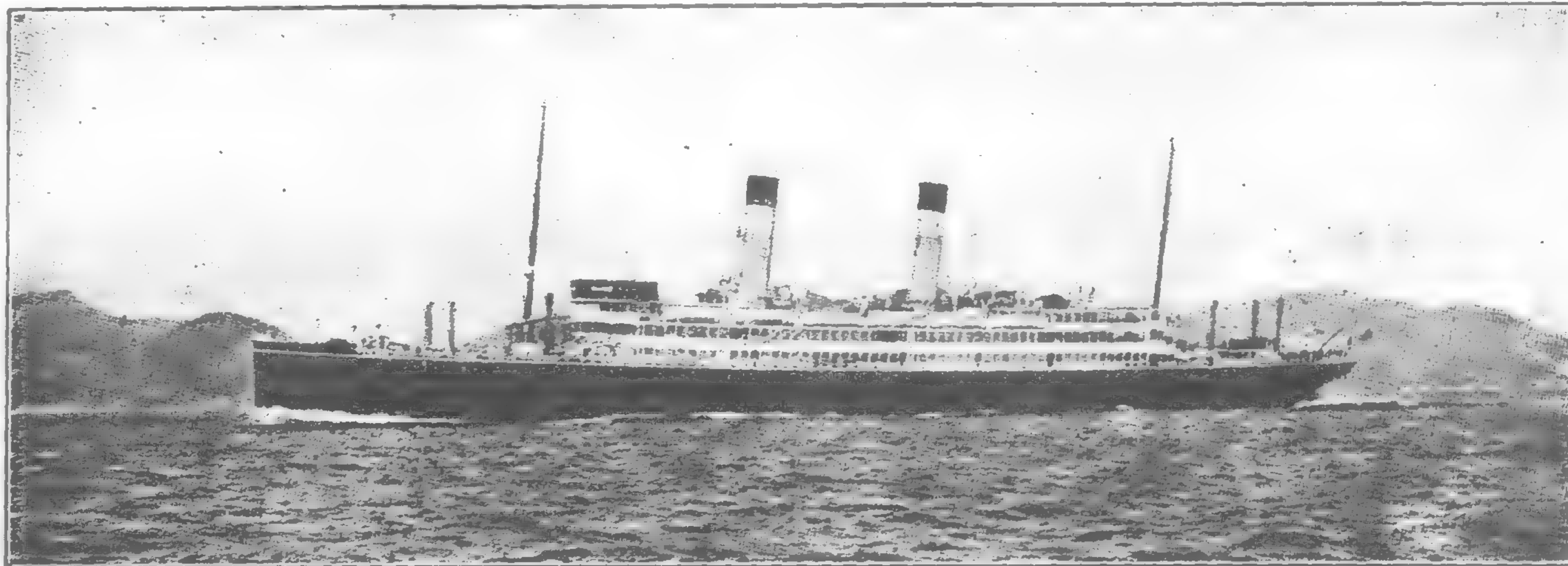
IMPORTS :

Rice, Chinese-Japanese Produce and Oils, Ceylon Dessicated Coconut and Cinnamon,
Singapore and Java Peppers, Nutmegs, and Tapioca

EXPORTS

SHIPPING

SAMPLES AND QUOTATIONS—C.I.F. ANY PORT ON APPLICATION



The *Tenyo Maru*, built and engined by the Mitsubishi Zosen Kaisha, Ltd., Nagasaki Works

MITSUBISHI ZOSSEN KAISHA, LTD., NAGASAKI WORKS

(ex Mitsubishi Dockyard & Engine Works, Nagasaki)

DOCK No. 1			DOCK No. 2			DOCK No. 3		
Extreme Length	523	Ft.	Extreme Length	371	Ft.	Extreme Length	722	Ft.
Length on Blocks	513	"	Length on Blocks	360	"	Length on Blocks	714	"
Width of Entrance on Top . .	88	"	Width of Entrance on Top . .	66	"	Width of Entrance on Top . .	99½	"
" " " " Bottom	77	"	" " " " Bottom	53	"	" " " " Bottom	88½	"
Water on Blocks at Spring Tide	26½	"	Water on Blocks at Spring Tide	22	"	Water on Blocks at Spring Tide	34½	"

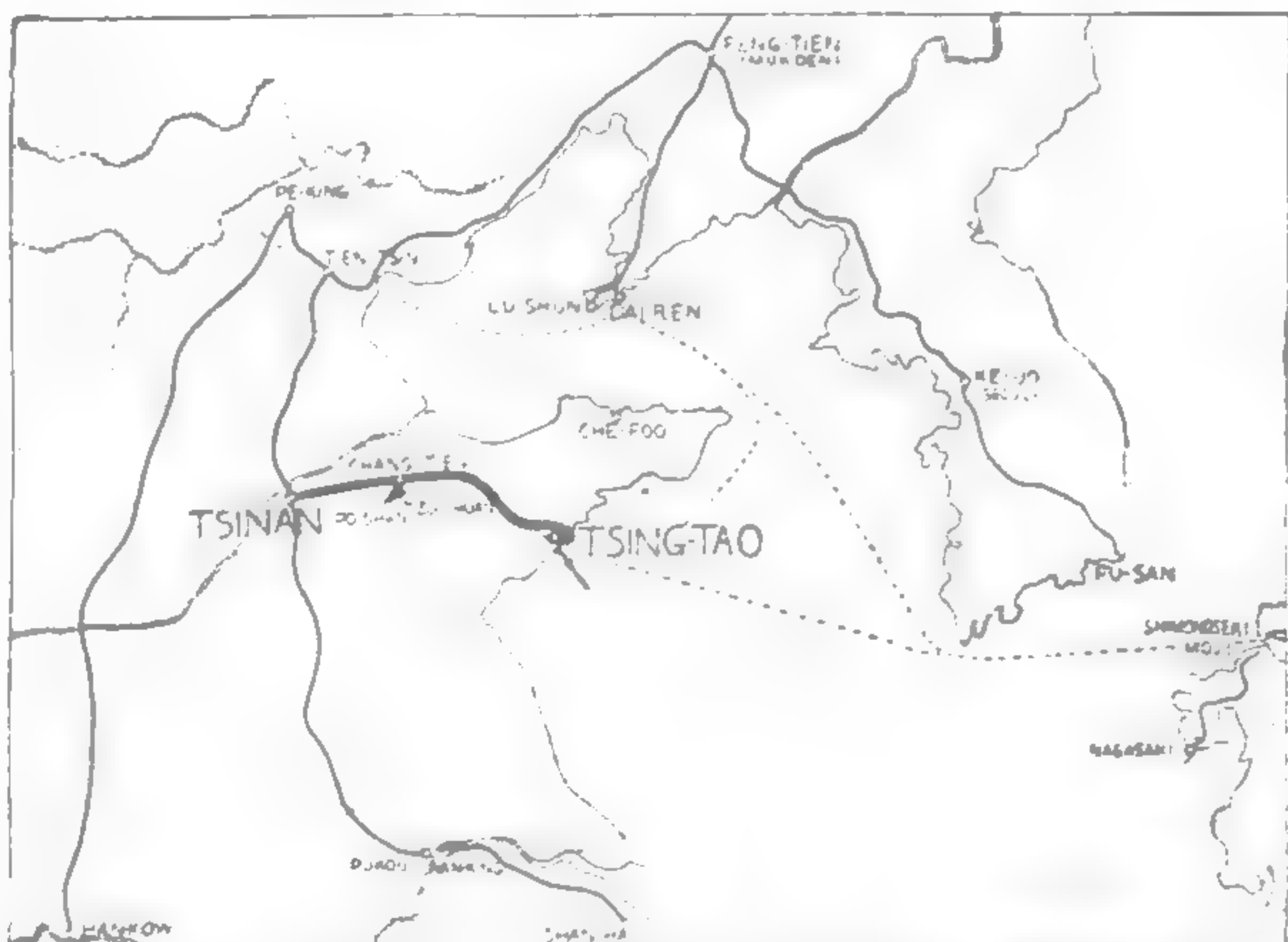
THE BEST EQUIPPED SHIPBUILDING PLANT IN THE FAR EAST

With Special Facilities for Handling the Heaviest Castings and the Repairing or Building of Ships, Engines, and Boilers
Also Electrical Work

LARGE STOCK OF MATERIAL AND FITTINGS ALWAYS ON HAND

SHANTUNG RAILWAY

The Shortest Route between Japan and North China



Ticket Agencies—The International Sleeping Car and Express Trains Co. and their Agents; Messrs. Thos. Cook & Son and their branch offices in various parts of the world.

Connections at Tsingtao—By steamer with Japan, Manchuria and Shanghai.

Connections at Tsinan—By Tientsin-Pukow Line with Tientsin, 6.40 a.m. daily, and with Pukow, 8.15 p.m. daily.

THROUGH TRAFFIC

Through passenger tickets are issued between the following principal stations of the Shantung Railway: Kiao-chow, Fangtsu, Weihsien, Chingchow, Changtien, Chowtsien, Chuan, Poshan, and the following points: In Manchuria—Newchwang, Liaoyang, Fushun, Mukden, Tiehling, Kanyun, Penchiu, Antung, and Dairen; in Japan—Yokohama, Yokkaichi, Osaka, Kobe, Ujina, Moji, Shimonoseki and Shanghai.

Steamer Connections—Steamers leave the wharves of the Large Harbour, Tsingtao, for Moji and Kobe every five days, for Shanghai about twice a week and for Dairen about three times a week.

For giving facilities to through passengers for Japan, a special train in connection with the night train No. 4 is operated from the Harbour Station to the Wharf, direct alongside the ship, on those days when the liners of the Nippon Yusen Kaisha, Osaka Shosen Kaisha, and Harada S.S. Co. are leaving.

Through passengers and their luggage are carried free of charge for this section.

Collieries—The Tzuchuan (Shisen) and Fangtzu (Goshi) Collieries are managed by the Mining Department of the Shantung Railway. At present the daily output of Tzuchuan coal is about 1,500 tons, far surpassing the amount taken out when the Germans were in control. The coal is well-known for its good quality and fair price.

Tsinan—Tsinan, the capital of Shantung, is the western terminus of the Shantung Railway, and also one of the most important stations on the Tientsin-Pukow Railway.

The Tsinan Railway Hotel, furnished in modern European style, is found on the upper floor of the Tsinan Station, under the control of the Shantung Railway Administration.

THROUGH TRAIN SERVICE

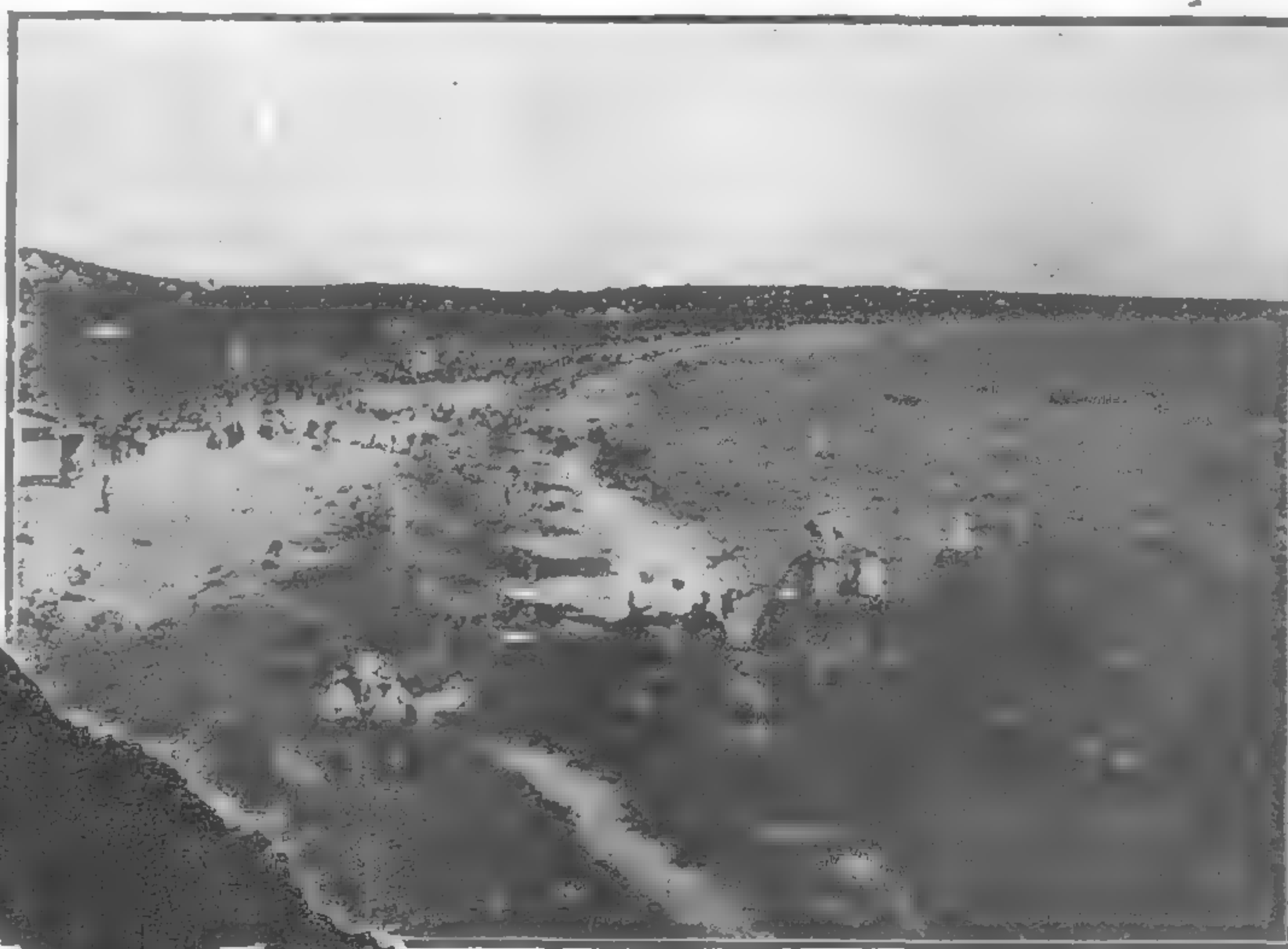
Train No. 1 leaves Tsingtao daily 8.00 a.m. arrives Tsinan 6.30 p.m.
Train No. 3 leaves Tsingtao daily 7.00 p.m. arrives Tsinan 7.00 a.m.
Train No. 2 leaves Tsinan daily 9.00 a.m. arrives Tsingtao 7.30 p.m.
Train No. 4 leaves Tsinan daily 8.30 p.m. arrives Tsingtao 8.30 a.m.

Local Trains run between Tsingtao and Weihsien, Fangtzu and Tsinan, and on the Poshan and Tzuchuan colliery branches.

Fares—Tsingtao-Tsinan—1st class, \$14.30; 2nd class, \$7.20.

First Class Sleeping Car—A first-class sleeping car is attached to night trains Nos. 3 and 4 running between Tsingtao and Tsinan. For a berth in the sleeping car three yen in silver is charged in addition to the ordinary first-class fare, irrespective of distance.

Dining Car—A dining car is attached to through trains Nos. 1, 2, 3 and 4 running between Tsingtao and Tsinan. Meals are served to order at any time.



BATHING BEACH, TSINGTAO.

Description of Tsingtao

Tsingtao is considered the most healthful place in all the Far East. The scenery including both mountains and sea, is most beautiful. There are quite extensive forest gardens, bits of woodland here and there, and many delightful shady lanes affording most interesting walks through them.

The roads are all broad, with very moderate gradients. They are of both macadamized and asphalt construction for vehicle traffic, while the sidewalks are either paved or concrete. These streets are practically all lined with beautiful shade trees.

The buildings are constructed principally in modern European style, with red tiles and white walls, contrasting pleasantly with the surrounding green mountains and blue sea.

The climate here is fine from Spring to Autumn, being neither too hot nor too cold. These climatic conditions make the place a favourite summer resort for Europeans and Americans from Shanghai, Tientsin, and other places.

The hotels are luxuriously furnished with up-to-date equipment and are under the efficient management of Mr. H. J. Hearne.

The hotel rates are \$6.00 and up, per day, on the American plan.



TSINGTAO STATION

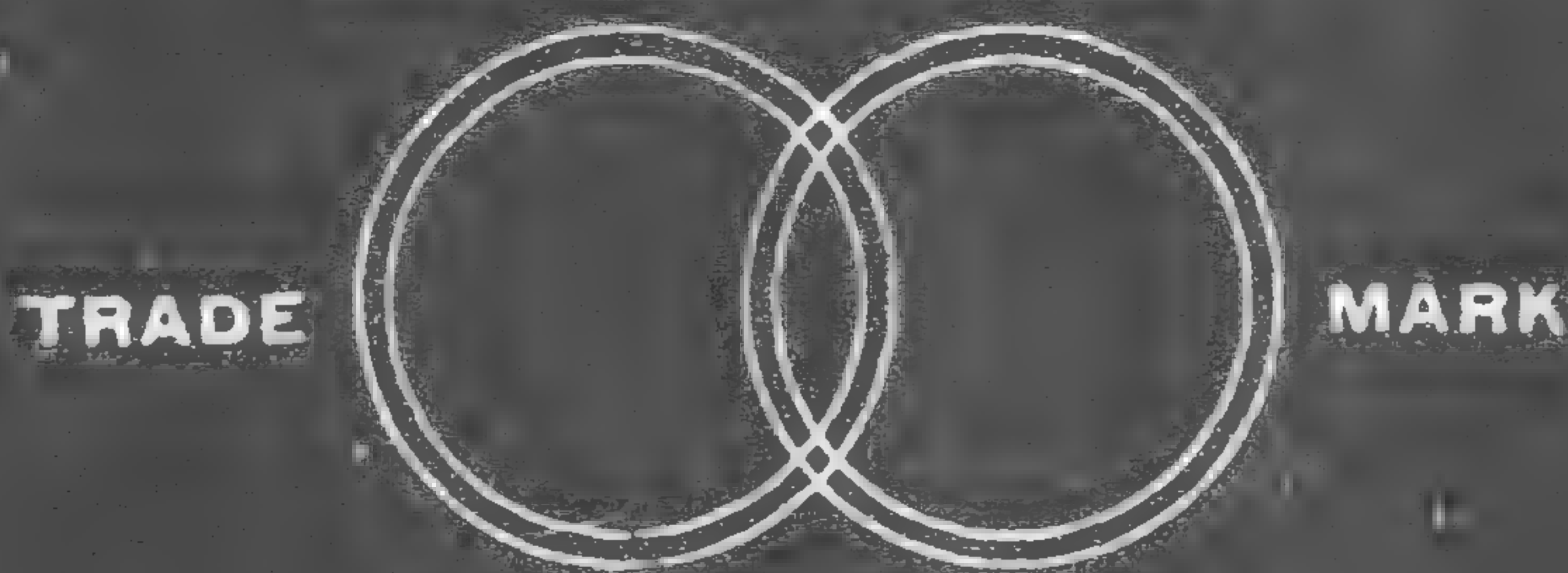
For Further Information, please apply to

THE SHANTUNG RAILWAY ADMINISTRATION, TSINGTAO

CABLE ADDRESS: "SANTETSU"

CODES: A.B.C. 5TH ED. & AL.

ON EVERY INGOT



CHINESE

ANTIMONY

"W. C. C." BRAND

PURITY, 99.40-99.70%, ARSENIC CONTENT,
NONTRACEABLE. PRODUCES NO POISONOUS
GASES. HIGHEST AWARD, SAN FRANCISCO, 1915

TUNGSTEN

HIGH GRADE CONCENTRATES

CHINESE TIN

PROMPT AND FUTURE SHIPMENTS FROM STOCKS IN NEW YORK, SAN FRANCISCO,
MONTREAL AND LONDON, ORDER DIRECT FROM

WAH CHANG

MINING & SMELTING Co., LTD.

THE WORLD'S LARGEST ANTIMONY PRODUCERS

NEW YORK OFFICE

2275 Woolworth Building

HEAD OFFICE

Changsha, China

AGENCIES

San Francisco, Montreal, London

SMELTERS AT

CHANGSHA

HSINHUA

MINES AT

YIYANG HSINHUA

ANHUA YUNLING

CHINA

THE ATHENIA STEEL CO.

General Offices
133 William St.,
NEW YORK, N.Y.
U.S.A.



Works
ATHENIA
New Jersey
U.S.A.

MAKERS OF—HIGH-GRADE TEMPERED AND POLISHED STEEL for Clock, Watch, Motor and Typewriter Springs. TEMPERED AND UNTEMPERED STEEL for Corset Wires, Writing Pens, Band Saws; Paragon Wire for Umbrella Frames, Round Wire for Phonograph Needles, and Round and Flat Wire for other special purposes.

EXTRA BRIGHT COLD ROLLED STEEL for light Stamping and Drawing purposes of superior quality.



PITTSBURGH STEEL COMPANY

Pittsburgh, Pa., U.S.A.

Manufacturers of

"PITTSBURGH PERFECT"

Open Hearth Steel Products

INCLUDING

Galvanized Wire	Varnished Wire
Bright Nail Wire	Bright Soft Wire
Annealed Wire	Wire Nails
Bright Hard Wire	Fence Staples
Bolt and Rivet Wire	
Galvanized Barbed Wire	

Pig Iron, Blooms, Billets, Wire Rods, Hard Spring Coil Wire, Twisted Cable Wire, Telephone Wire, Bale Ties, Steel Hoops, Steel Bands, Cotton Ties and Fabricated Stock, Poultry and Lawn Fencing.

We are prepared to give PROMPT SERVICE and solicit your inquiries accompanied by complete specifications.

Address

PITTSBURGH STEEL COMPANY
EXPORT DEPARTMENT

Equitable Building, New York, U.S.A.

Cable Address: PITTSTEEL

CANADA CARBIDE CO., LTD.

Head Office: MONTREAL, CANADA,

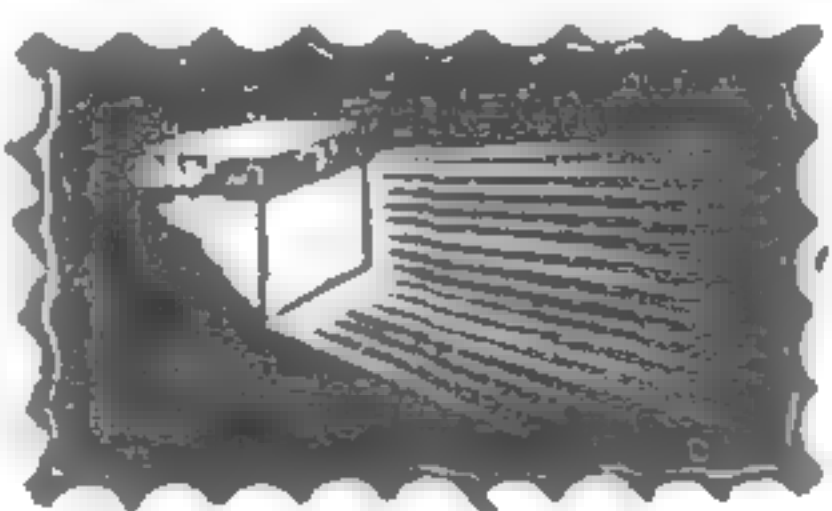


Manufacturers and Exporters of
"S" BRAND HIGH-GRADE CARBIDE OF CALCIUM

Cable Address: CARBIDE, Montreal, Canada.

Western Union, Bentley's and A.B.C. 5th Edition Codes.

USE HAYWARDS' LIGHT and BUILDING SPECIALITIES.



Pavement Lights.	Collapseable Gates
Iron Staircases.	Puttyless Roof Glazings.
Heating & Ventilating.	Skylights and Lanterns.
Steel Casements & Sashes.	Lead Lights & 'Copperlites.'

HAYWARDS, LTD.

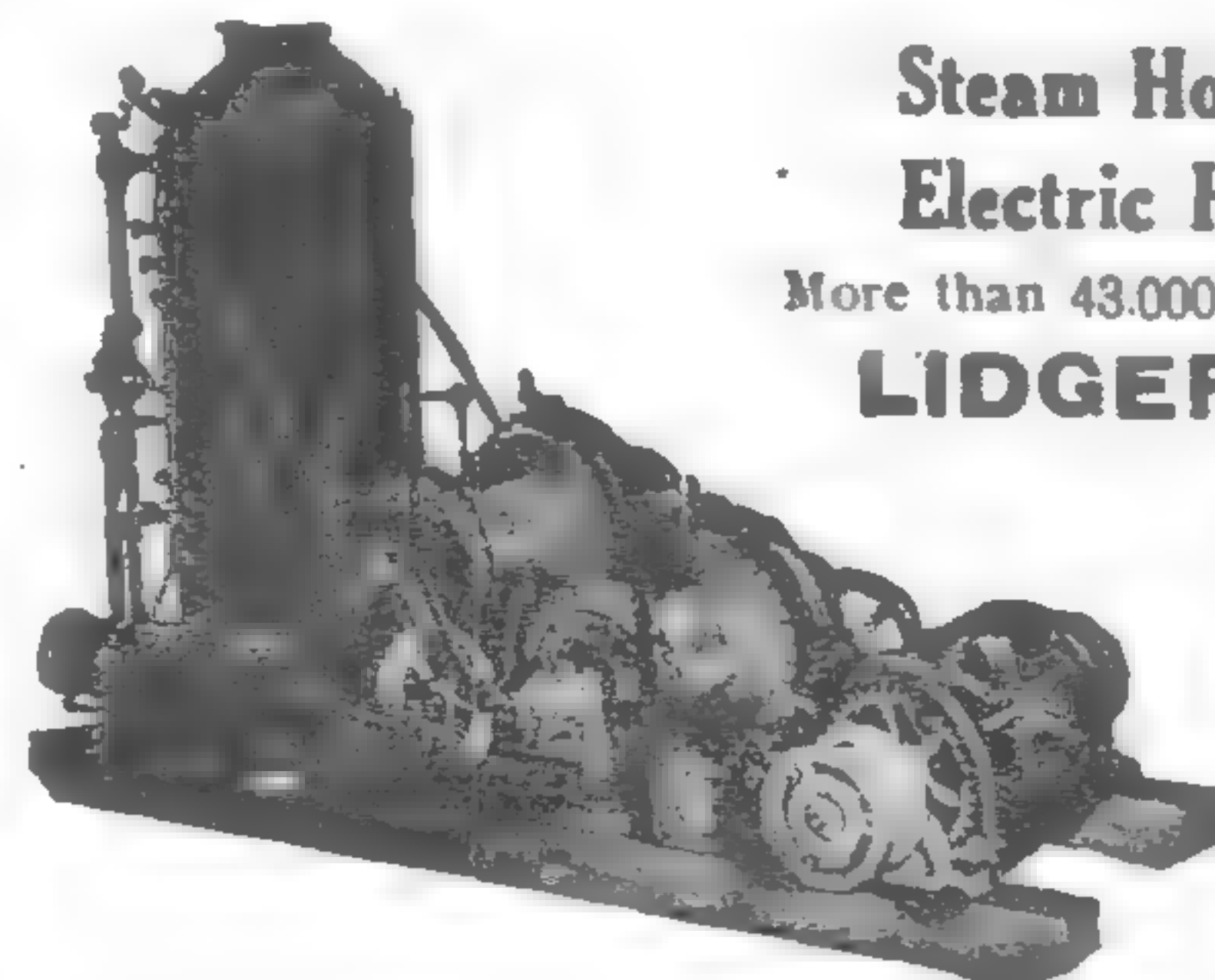
UNION ST., BOROUGH, LONDON, S.E.

TEL HOP 3642

LIDGERWOOD

HOISTING ENGINES

For Every Purpose



Steam Hoists built up to 1,000 H.P.

Electric Hoists built up in any size

More than 43,000 Engines and Hoists built and in use.

LIDGERWOOD MFG. CO.

96 Liberty St., New York, N.Y., U.S.A.
Friars House, New Broad St., London, E.C.

Andersen, Meyer & Co., Ltd.

Shanghai, Hongkong, Hankow,
Tientsin, Peking, Changsha, Harbin.

The Best Directory of China

"THE NORTH-CHINA DESK HONG LIST"

Published by

North-China Daily News & Herald, Ltd.

Printers, Publishers, Advertising Agents, etc.

17 The Bund, Shanghai, China.

United States Steel Products Company

UNION BUILDING, 4 THE BUND, SHANGHAI

Telegraphic Address:
"STEELYARD SHANGHAI"

Exporters of the Products of
AMERICAN BRIDGE COMPANY
Manufacturers of Steel Structures of all classes, particularly
BRIDGES and BUILDINGS



DOUBLE TRACK STRAUSS DRAW SPAN, BALTIMORE AND OHIO R.R.

Railway Bridges, Railway Turntables, Highway Bridges, Godowns
Mill Buildings, Office Buildings, College Buildings, Auditorium, Steel Tanks, Steel Towers,
Steel Penstocks, Steel Pontoons and Derricks

Designs and Estimates Furnished Promptly

Our Facilities are Unequalled for Manufacturing Accurately to Measurement, Quickly, and in Large Quantities

Send us your specifications or request an engineer to call upon you

NILES-BEMENT-POND CO

Complete Machine Tool Equipments for Heavy Ordnance and Small Arms Arsenals, Shipyards, Railroad Shops or General Machine Shops

Cable Addresses:

"NILESCO," NEW YORK
"NILIACUS," LONDON

General Offices: 111 Broadway, New York, U.S.A

London Office:

25 VICTORIA STREET, S.W.

Machine Tools for General Manufacturing

LATHES: From 9" swing up to meet any requirements.

PLANERS: From 30" between housings up to meet any requirements.

BORING MILLS: 36" swing up to meet any requirements.

SLOTTERS: 6" to 92" stroke.

DRILLING MACHINES: 24" to 60" RADIAL: 4', 5', 6', semi and full universal: also heavy duty type up to 10' MULTIPLE SPINDLE: 2, 4 and 6 spindles; in variety of types.

Ship and Navy Yard Equipment

BENDING ROLLS.

STRAIGHTENING ROLLS.

PLATE PLANERS.

ARMOR PLATE PLANERS.

GARBOARD BENDING MACHINES.

FLANGING PRESSES.

Pratt and Whitney Precision Machine Tools

Engine Lathes, 14" to 16" Swing: Turret Lathes; 10" Toolmakers' Lathe; Milling Machines, Hand and Automatic; Cylindrical and

MILLING MACHINES: Built in variety of types and sizes to suit customers' requirements.

SHAPERS: Traveling Head. Single or Double Head. 22" and 26" stroke.

HORIZONTAL BORING AND DRILLING MACHINES.

HORIZONTAL BORING, DRILLING AND MILLING MACHINES.

CYLINDER BORING MACHINES.

CRANK SHAFT LATHES.

ROTARY PLANING MACHINES.

STEAM HAMMERS: single and double frame.

STEAM DROP HAMMERS, Etc.

CRANES.

TRAVELING CRANES, HOISTS,

etc.

Surface Grinding Machines: Single and Multiple Spindle Drilling Machines; Die Sinking Machines, etc.

Pratt and Whitney Standards and Gauges

Machine Tools for Railroad and Repair Shops

LATHES, Driving Wheel: 51" to 90" swing.

LATHES, Car Wheel.

LATHES, Axle.

WHEEL PRESSES: Capacities, 200 to 600 tons and to take wheels from 42" to 90"

CAR WHEEL BORING MACHINES, to take wheels up to 42".

AXLE CENTERING AND CUTTING OFF MACHINES. WHEEL QUARTERING MACHINES.

Gun and Projectile Manufacturing Machinery

Including machine tools for the manufacture of all sizes of naval and coast defense guns, gun mounts, turrets, field artillery, shrapnel and high explosive shells.

LATHES—Gun Boring and Turning.

LATHES—Projectile Boring.

LATHES—Projectile Turning.

LATHES—Engine, equipped with attachments for various operations on projectiles and guns.

RIFLING MACHINES. STEAM HAMMERS, SAWING MACHINES, HYDRAULIC PRESSES.

Pratt and Whitney Precision Machine Tools for Small Arms Arsenals

Gun Barrel Drilling Machines, Rifling Machines, Gun Barrel Turning Machines, Profiling Machines, Die Sinking Machines.

Automatic Milling Machines, Lincoln Milling Machines, Gun Barrel and Tube Reaming Machines, Drilling Machines.

Pratt and Whitney Machinists Small Tools

Correspondence Invited

THE MUNICIPAL ELECTRICITY DEPARTMENT

HAS RECEIVED DEMANDS FOR

ELECTRIC POWER

AMOUNTING TO

80,000 HORSE POWER

AND PLANS TO INCREASE ITS GENERATING PLANT TO A CAPACITY OF

180,000 HORSE POWER

DO

YOU

THINK

IT IS POSSIBLE TO MAKE YOUR OWN POWER AT A COST WHICH CAN COMPETE

WITH THE

CHEAP RATES

MADE AVAILABLE

BY THE OPERATION OF THIS VAST MODERN POWER PLANT?

ASK

THE POWER DEPARTMENT, 66 SZECHUEN ROAD, SHANGHAI

TELEPHONE FOR AN APPOINTMENT TO CENTRAL 283.

Steel for Service

The campaign being carried on against wastefulness is applicable in the industries no less than in the household.

A lamentable sight even to the engineer who has no money interest at stake is that of a lot of wood sheet piling battered beyond usefulness often in the first driving.

This is especially annoying to the man who has paid for that lumber with his own money and expects to get multiple service out of it.

There is no such waste when

United States Steel Sheet Piling

is used.

It can be redriven practically an indefinite number of times.

Why not eliminate waste and at the same time, save money?

UNITED STATES STEEL PRODUCTS CO.

4 The Bund, Shanghai

General Offices—Pittsburgh, Pa.



Herring-Hall-Marvin Safe Company

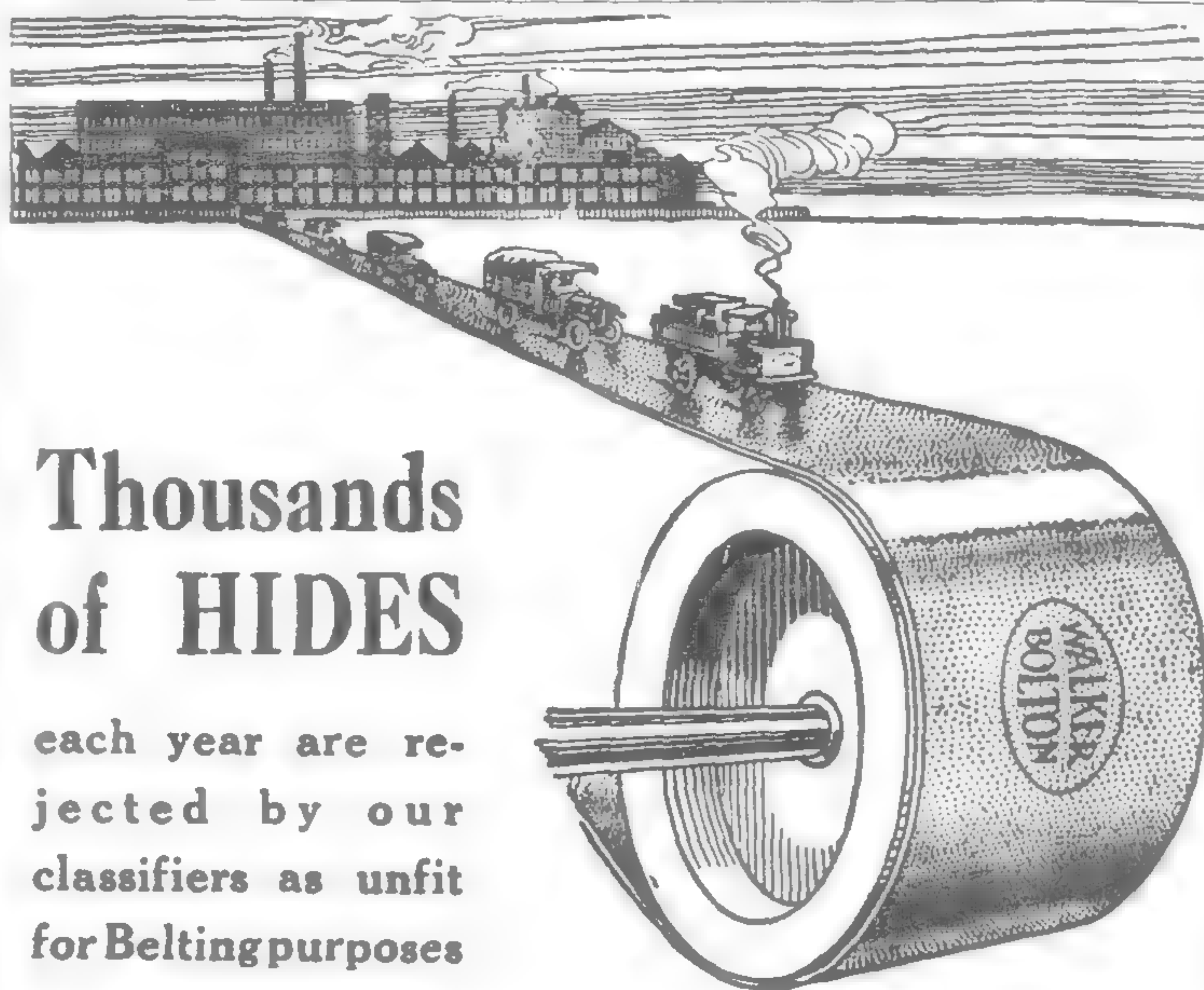
Largest Manufacturers in U.S.A. of

**FIRE AND BURGLARPROOF SAFES
BANK VAULTS AND DEPOSIT BOXES**

Mustard & Co.

Sole Agents for China including

**Hongkong and Macao,
Shanghai, Tientsin, Hongkong, Canton, Harbin**



Thousands of HIDES

each year are rejected by our classifiers as unfit for Belting purposes

We can afford to do this as we have a commercial use, apart from belting, for every scrap of material we handle.

By this means we can ensure that only the finest hides of the requisite growth and fibre are retained for the production of Walker's Belting.

The importance we attach to the selection of material for belting butts is due to the fact that only very few hides are suitable for the production of the highest quality belting.

Consumers will do well to bear this fact in mind, and when ordering belting to specify WALKER'S BELTING.

In all there are fifteen varieties of Walker's Belting, providing a belt for every drive.

Oak-tanned, Saffron-tan, Raw Hide, Chrome, Square, and Twisted Bands.

Cotton Balata, etc., etc.

WALKER'S BELTING

If you have had any difficulty in the transmission of power, you may have the benefit of our experience if you will write us fully stating your trouble.

The accumulated experience of nearly a hundred years is at your disposal on request.



This sign stamped on alternate lengths of leather belting is a guarantee of quality.

You should have our Price List "The Range at a Glance" before you whenever you are ordering Belting. It will save you time and money.

Leather	Pickers, Picking Bands,
Loom	Picker Stoppers; Buffer
Fittings, etc.	Straps, Buckle Straps,
	Check Straps; Belt Laces, etc.

**WM. WALKER & SONS, LTD.,
Bolton, England.**

B 8

Contractors to H.M. Government.

DOLLAR LINE

REGULAR TRANS-PACIFIC FREIGHT SERVICE

ORIENT—PACIFIC COAST

Through Railway Bills of Lading issued to all points in the United States and Canada

LUMBER

WHOLESALE IMPORTS of OREGON PINE—
RETAIL DEPOTS at HANKOW and TIENTSIN

THE ROBERT DOLLAR CO.

UNION BUILDING, SHANGHAI

TELEPHONES CENTRAL 2303, 2304, 2331

Head Office U.S.A.—SAN FRANCISCO

Head Office Orient—SHANGHAI

OFFICES:

SAN FRANCISCO
VANCOUVER, B.C.
SHANGHAI
HONGKONG

HANKOW
SINGAPORE
NEW YORK
SEATTLE

MANILA
KOBE
TIENTSIN

AMERICAN BLOWER CO.

(EXPORT DEPARTMENT)

141 BROADWAY, NEW YORK, U.S.A.

ENGINEERS AND MANUFACTURERS

FANS AND BLOWERS

For Heating, Ventilating, Cooling, Humidifying,
De-Humidifying, Mechanical Draft, etc.

DRYING SYSTEMS

For Lumber, Bricks, Fruit and Vegetables, etc.

BLAST EQUIPMENT

For Forges, Furnaces, Cupolas.
Conveying Materials by Air Blast.

STEAM ENGINES

For Blowers, Generators, Pumps, Mechanical
Stokers, etc.

STEAM TRAPS

Executive Offices: Detroit, Mich., U.S.A.
Works: Detroit, Mich., U.S.A.
Troy, N.Y., U.S.A.

CHEMICALS

For all Industrial Purposes.

Caustic Soda 70/72% in drums.
Aniline Oil 99/100% in drums.
Bichromate of Soda in casks.
Sulphuric, Nitric, Hydrochloric
Acids, in jars, in cases.
Oxalic Acid, etc.

DYES

*For Cotton, Wool, Silk, Leather,
Paper, etc.*

Acid, Direct, Basic, Sulphur, Oil Soluble, Pigment,
Butter Colouring, Pure Dyes for Food purposes.

SHADES MATCHED. ENQUIRIES SOLICITED.

JAMES C. BARR, LIMITED,

Manufacturers & Merchants,

27 BLYTHSWOOD SQUARE,
GLASGOW.

Telegraphic Address:
"BARRIADA, GLASGOW"

Codes:
A.B.C. 5th Edition.
Lieber 5 letter.
Marconi's International.

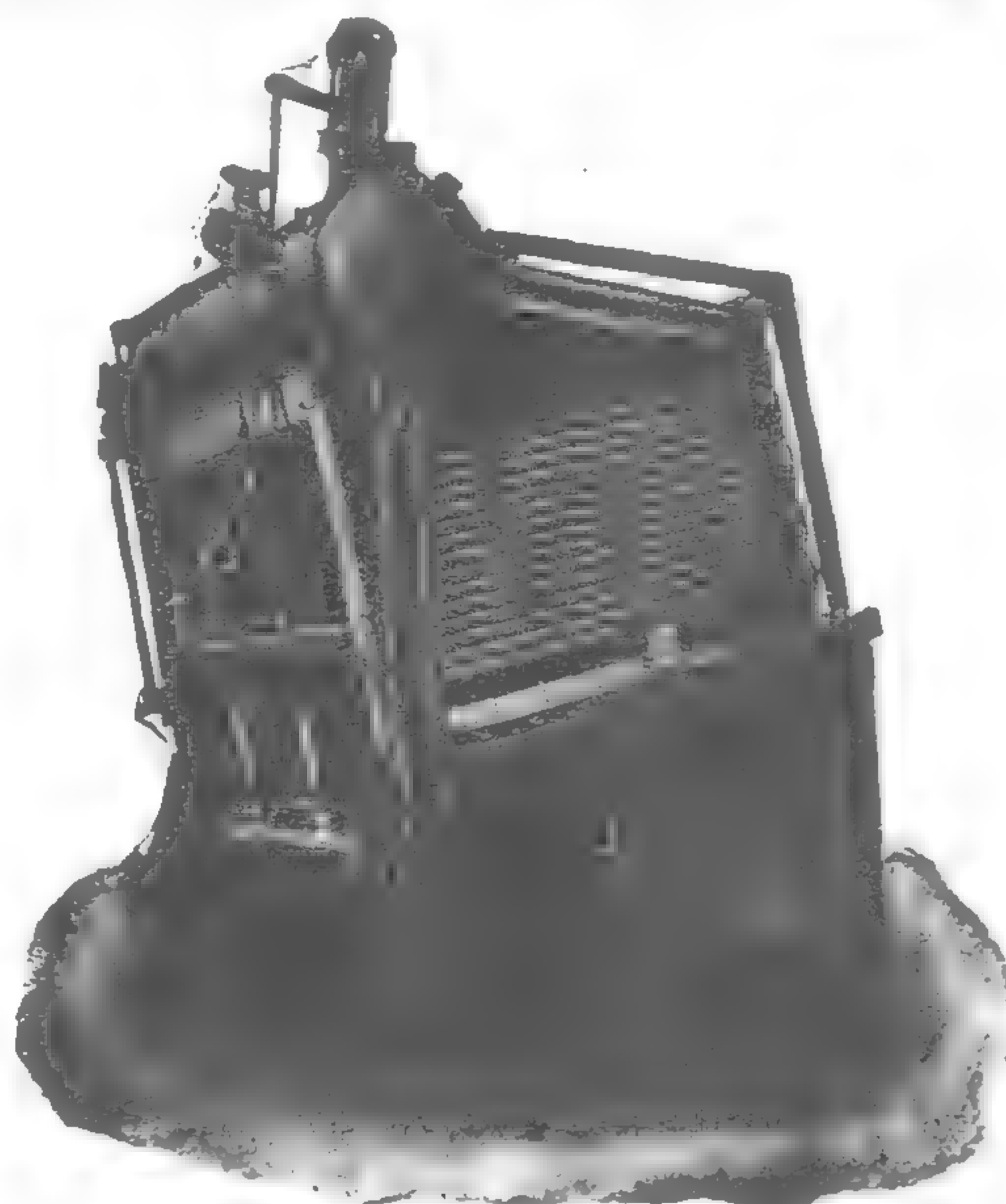
BABCOCK & WILCOX, LTD.

PATENT WATER-TUBE STEAM BOILERS

SUITABLE FOR ALL INDUSTRIES, AND FOR BURNING ANY KIND OF FUEL
13,400,000 H.P. Land type For Stationary Purposes—6,400,000 H.P. Marine-type Afloat

MANUFACTURERS OF

SUPERHEATERS
FEED-WATER HEATERS
ECONOMISERS
STEAM PIPING
STRUCTURAL STEEL WORK
MECHANICAL STOKERS
STEEL CHIMNEYS
WATER SOFTENERS AND PURIFIERS
COAL-CONVEYING MACHINERY
SUCTION ASH PLANTS
ELECTRIC CRANES
GENERAL BOILER HOUSE ACCESSORIES



THE BABCOCK & WILCOX PATENT MARINE-TYPE BOILER

as used in Battleships and Cruisers of the British, American, Danish, Italian, Spanish, Brazilian, and Argentine Navies, and in Vessels of all Classes of the Mercantile Marine.

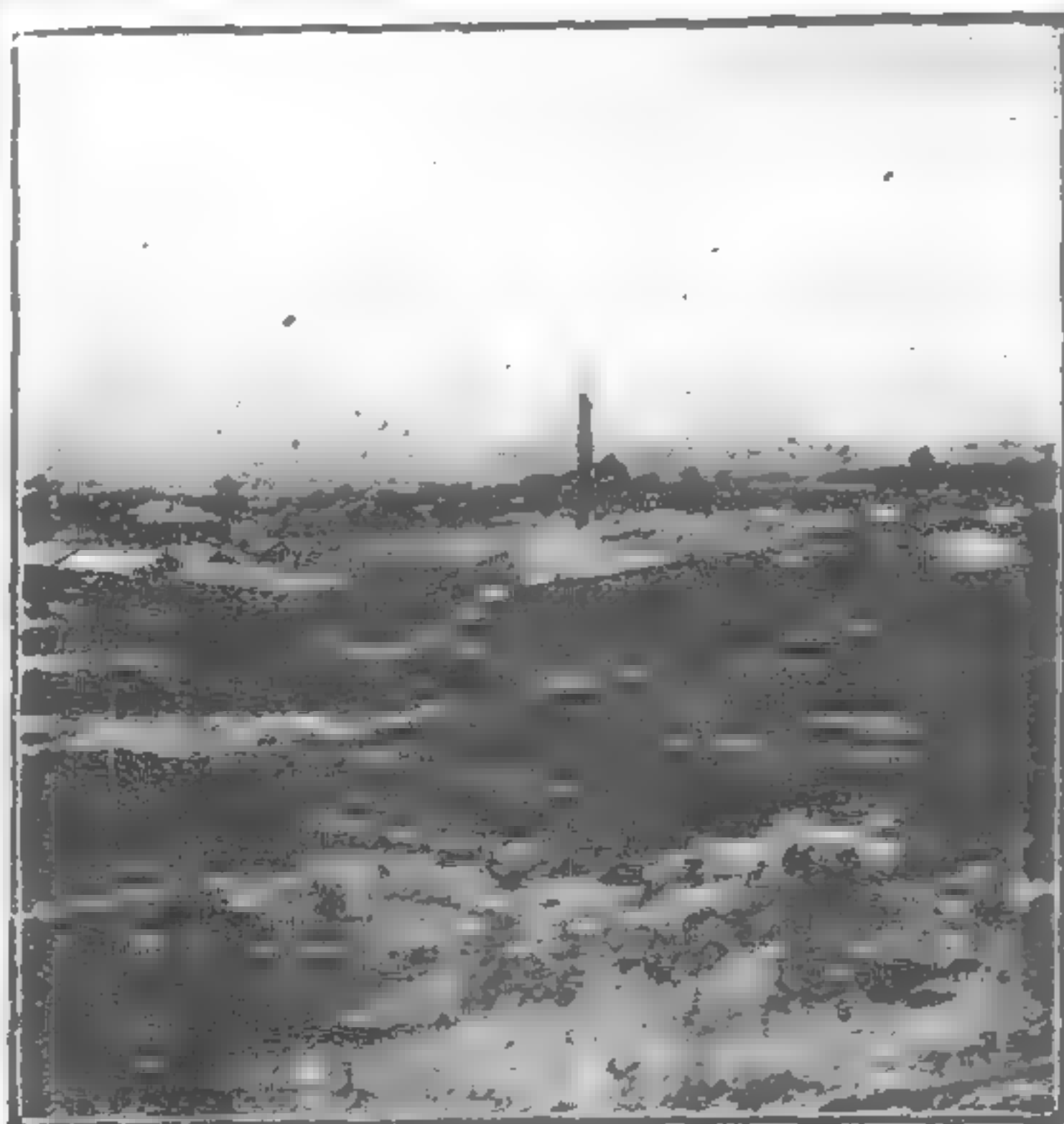
BABCOCK & WILCOX also Supply as Joint Manufacturers and General Licensees with J. SAMUEL WHITE & CO., LTD. the WHITE-FORSTER Boiler for Destroyers, Torpedo Boats, Pinnaces, etc.

Babcock & Wilcox Marine Boiler

HEAD OFFICE FOR CHINA: 18 SZECHUEN ROAD, SHANGHAI

" " " JAPAN: I. I-CHOME, YURAKU-CHO, KOJIMACHIKU, TOKYO.

ROPES WIRES NEEDLES



ROPE DEPARTMENT

Steel wire rope, Manila rope, White or tarred hemp rope, Trawl twine, Cotton rope and all other kinds of cordages, Steel wire and all other kinds of metallic wires.

WIRE WORK DEPARTMENT

Sewing needle, Gramophone needle, Wire heald and all other kinds of wire work goods.



YOKOHAMA SEIKO KAISHA, JAPAN.



Briggs'

ESTABLISHED
1865

BITUMINOUS SOLUTIONS

are cheaper, better and have greater covering capacity than any lead or oxide paints

Eminently suitable for all colliery headgear, railway rolling stock, ships and all structural steelwork liable to corrosion.

THE "WORLD'S RECORD" ANTI-CORROSIVES

Patentees and sole manufacturers:

W. BRIGGS & SONS, LTD.

Head Office: **DUNDEE**

Cable Address: "CEMENT DUNDEE" Codes Used: SCOTT'S A.B.C. 5TH ED.

Agents for the Far East:

DODWELL & CO., LTD. HONGKONG



*Electrically Right
Mechanically Right*

**Fairbanks-Morse
Motors and Generators**

A C and D C

are built for long life and efficient service.

They are designed by engineers who know your rigorous requirements. Their quality has been proved by a long successful service record.

Solid metal A. C. rotor "cage" winding—no screws, bolts or rivets to break or fall out—no joints to loosen—no arcing at bars or rings—no sparking.

Ball bearings packed with grease—insures reduced friction and little attention. Rigid cast frame gives firm base for moving parts—maintains alignment for belt, gear or chain drive—big shafts and big bearings.

Fairbanks-Morse world-wide and time-proved reputation for quality and service guarantees the efficiency and durability of every motor and generator.

PHILIPPINES: Pacific Commercial Company, Manila.
CHINA: Andersen, Meyer & Co., Ltd., Shanghai.
INDIA: Pyne, Hughman & Co., Calcutta.
JAPAN: Sale & Frazer, Ltd., Tokyo.
DUTCH EAST INDIES: Technisch Bureau Soenda, Brandoeng, Java.

Fairbanks, Morse & Co.
INCORPORATED MANUFACTURERS

Foreign Dept.,
NEW YORK, U. S. A.

London, England

Buenos Aires, Argentina



A. V. ROE & Co., Ltd.

Designers and Constructors of
Aeroplanes and Accessories

At present we are engaged solely on Government Work. Other orders can, however, be accepted now for delivery after the signature of Peace.

AEROPLANES & PARTS

AVRO is the brilliant name in Aeroplane and Seaplane construction. It is a guarantee of Quality in the manufacture of flying machines of every description

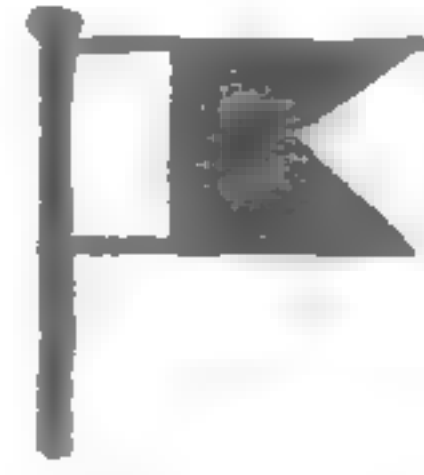
**MANCHESTER
SOUTHAMPTON**

and 166 Piccadilly, London, W 1

The New Engineering & Shipbuilding Works, Ltd.,

PROPRIETORS OF THE YANGTSZEPOO DOCK

CALL FLAG :



INTER. "A"

HEAD OFFICE:

37 Yangtszepoo Road
Shanghai

Telephones:

Managing Director East 81
Secretary & General Office „ 84
Drawing Office „ 3
Superintendent „ 83
Dockmaster's Office „ 80
Vulcan Works & Extension
to Boiler Shop Office „ 82



Cable Address:

"SPEEDY"

Codes Used:

A.B.C. 5th Edition
Engineering
Bentley's, and
Western Union.

VIEW OF WORKS, DOCK AND WHARVES

Showing s.s. *Telamon* (4,509 tons) in Dock and nine vessels undergoing repairs at one time alongside Company's Wharves

Engineers, Shipbuilders, Boilermakers, Electricians, Founders, etc.

The Works, Yards, Dock, Patent Slips, and Offices are situated on the Shanghai side of the river, opposite the centre of shipping and ten minutes by road or water from the heart of the city. The property owned by the Company covers an area of about 35 English acres with a river frontage of 1,600 feet, with wharves and pontoons to accommodate vessels whilst undergoing repairs. Shear Legs with steam power to lift 70 tons are placed at the head of the Dock, and slips for hauling up small vessels are provided.

The Works are equipped with the most modern machinery, electrically driven and capable of handling the largest Marine Engineering Work. Light railway lines are laid throughout workshops and yards.

A staff of divers, and complete salvage outfit is held in readiness for all cases of emergency, also Floating Cranes.

Contracts are undertaken for Coast and River steamers, tugboats, launches, lighters, pontoons, shallow draft side or steel steamers. Every description of repairs and renewal work expeditiously executed at most moderate charges.

Makers of the "SPEEDY" Marine Motor Engine—up to 50 B.H.P.

PARTICULARS OF DOCK

Length on blocks	...	...	...	...	...	...	...	...	570 feet
„ overall	...	...	...	...	...	...	...	...	577 „
Entrance...	...	...	...	...	...	...	...	...	70 „
Width of sill	...	...	...	...	...	...	...	...	60 „
Depth to floor	...	...	...	...	...	...	...	...	28 „
Depth on sill	...	...	...	...	...	(H.W.O.S. tides)	...	...	21 „
Depth on 3 feet blocks	...	...	...	...	...	(do)	...	...	21 „

LARGE PATENT
SLIP TO ACCOM-
MODATE VESSELS
UP TO 200 FEET
IN LENGTH



BERTHS FOR
BUILDING VESSELS
OF ANY SIZE

Steel Auxiliary Schooner *Alfonso*, built to Lloyd's highest class. Length, 156-ft. O. A., 135-ft. B. P. breadth, 30-ft.; depth, 14-ft.; 6-in., 550 tons. Fitted with Auxiliary Crude Oil Motor Engines.

VICKERS'

Patent SYSTEM of
TAIL SHAFT LUBRICATION and PROTECTION

Wear reduced, Corrosion and Rust Prevented.
Friction reduced, and **Speed** increased.
Simple, Strong, Effective. **No Springs** used.
Suits any Kind of Bush.
Fitted to "A" Brackets and Outer Bearings.
Time in Dry Dock and Repairs Reduced to a Minimum.

Vickers' non-corrosive Lubricants.
Neox. D. For Tail Shafts and Thrust Blocks.
418 B. For Tail and Paddle Shafts.
Vickerline Brick. For Paddle and Tunnel Shafts.

THE B. R. VICKERS (LEEDS) ENGINEERING CO., LTD.
LEEDS, ENGLAND

Telegrams: "Vickers" Leeds

"WOODBERRY" SAIL AND ARMY DUCK

Also

Wide Duck	Filter Cloth	Narrow and Wide Drills
Double Filling	Hose	Twills
Single Filling	Belting	Sheetings
Dryer Canvas	Yarns	Specialties

KHAKI CLOTHS, BLEACHED GOODS, PRINT CLOTHS

Turner, Halsey Co.

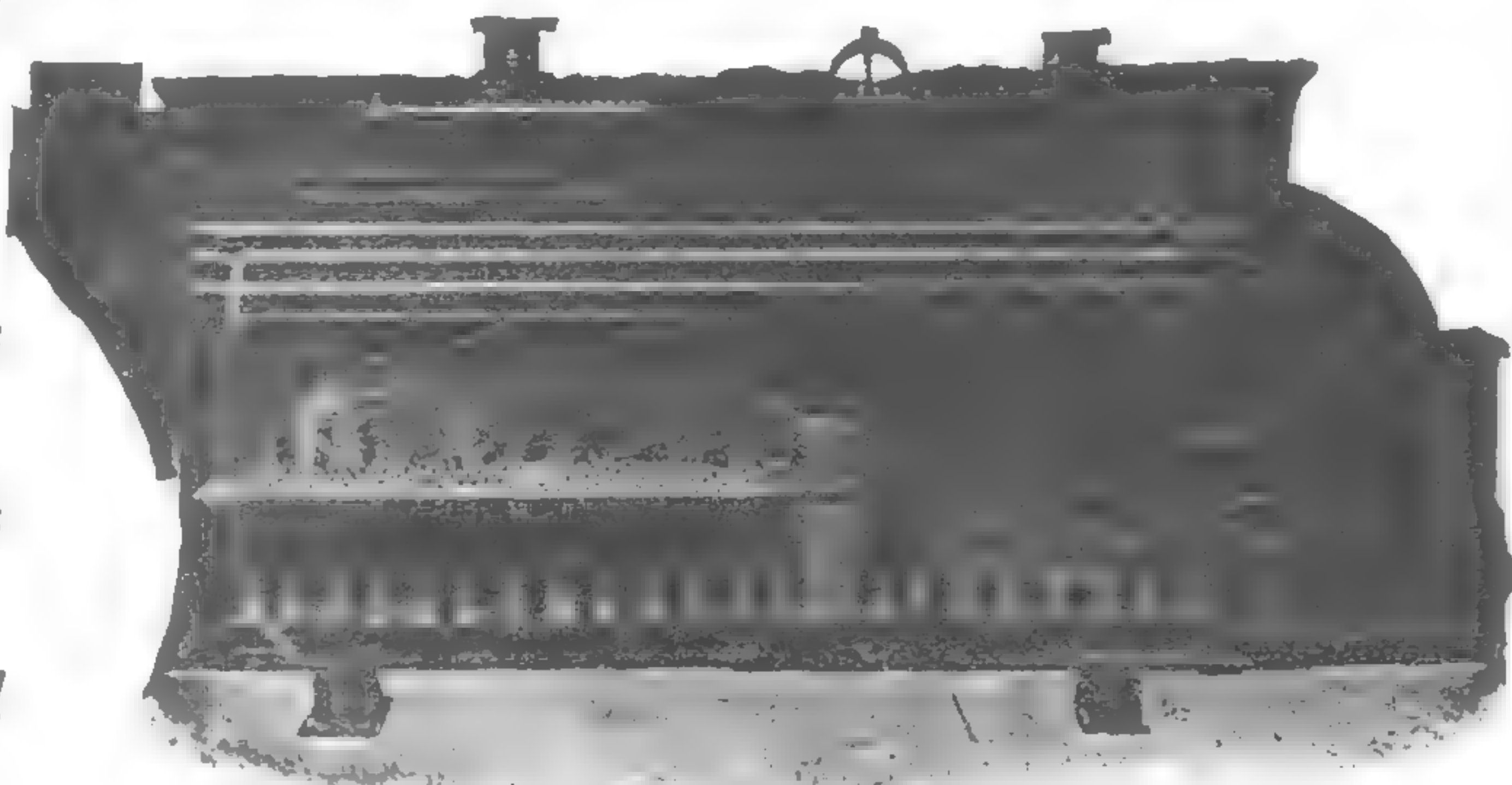
62 Leonard St., New York, U. S. A.
Cable Address: "Harlomoor," New York.
San Francisco—600 Postal Telegraph Bldg.

Sales Agent for

Mt. Vernon-Woodberry Mills, Inc.

Freeman's Internally Fired Boilers

Also Manufacturers of
**Horizontal
Return Tubular
Boilers, Scotch
Marine Boilers
and Water Tube
Type Water
Jackets, Steel
Tanks, All Kinds
of Steel Plate
Work, Self-
Supporting Steel
Stacks, Stand
Pipes, etc.**



This type of Internally Fired Boilers is the most compact and efficient boiler that is made. It is portable, occupies little space, requires no brick walls and is the most economic boiler to operate. We recommend it highly for Sugar, Tea, Rice Plantations and General Power Plants. Send for catalogue and prices. Write for descriptive illustrated catalogue, sent post free.

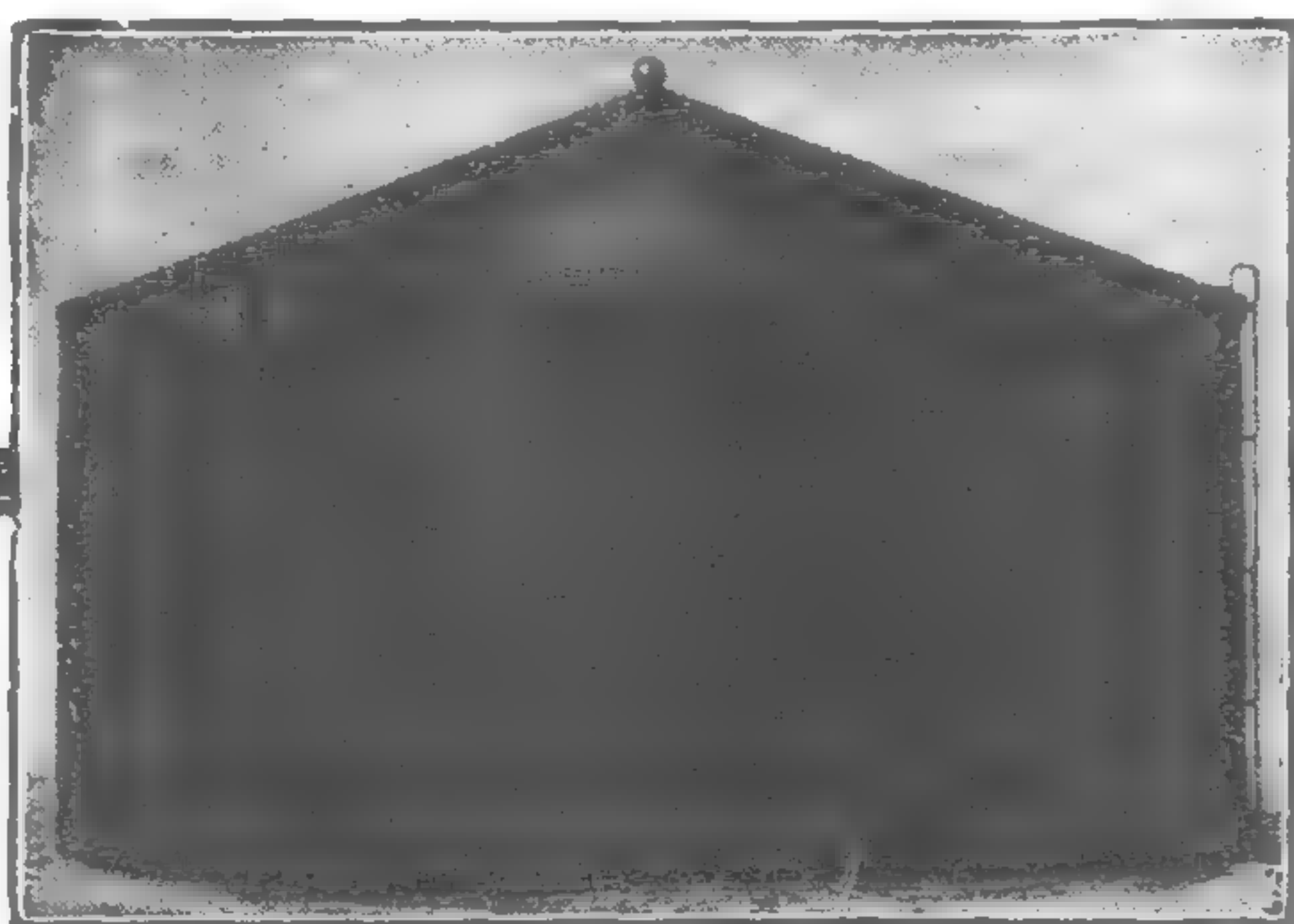
Agents: Desirable firms wanted to represent us in the important cities of the Far East.

Freeman Manufacturing Company

Main Office and Works: RACINE, WIS., U.S.A. Cable Address: "Freeman, Racine"

Advantages of Freeman's Internally Fired Tubular Boilers

1. They are self-contained and are portable.
2. They are free from brick setting, tie-rods, buck-stays and all troublesome complications due to bricked-in boilers.
3. They require but little foundation preparation: just two small piers.
4. The boilers are ready for steam connections as soon as they are set in their iron cradles.
5. They are economical in space and require less head room, and less room in length and breadth than any other pressure type of boiler.
6. They are simple, sure and durable.
7. They will develop over six horse power to every square foot of grate surface.
8. They will develop a horse power to every seven square feet of heating surface, oftentimes more.
9. They give an evaporation of from 10 to 12 pounds of water per pound of combustible, saving from 15 to 25 per cent of the usual fuel bill of a bricked-in boiler.
10. They will burn the lowest grade of fuel, and when properly fired are practically smokeless.
11. Any form of mechanical stoker, natural or induced draft can be attached.
12. They are steady steamers, maintaining a uniformly high pressure under varying loads and conditions, owing to the large volume of water which acts as a reservoir of heat.
13. They are quickly and easily accessible for cleaning and making repairs.
14. In locations where hard or contaminated water must be used, they suffer less from mineral and other harmful deposits in feed water than boilers of any other type, because of the settling of substances at the bottom of the boiler below the fire line, directly under the furnaces.



Steel Tanks for Storage

For storage purposes no tank can compare with the *all-steel* tank in point of efficiency, low maintenance cost and enduring qualities. It neither bursts, burns, rots nor crumbles. It is adapted for every storage requirement.

The Chicago Bridge & Iron Works has for half a century successfully solved the peculiar problems involved in the storage of water, oil, alcohol, molasses, pulp, acids and other liquids. The steel tank is immune to climatic ravages and lasts indefinitely.

Use Steel and Build for Permanency

We also manufacture

Elevated Steel Tanks—for municipal, factory and railroad service.
Steel Smoke Stacks—for factories, power plants, etc.
Steel Coaling Stations—for railroad and dock service.
Steel Flumes and Pipe Lines—for municipal and factory service.
Plate Metal Work of all classes.

The location of our factories in the steel centre of the United States and our branch offices on the Atlantic and Pacific seaboard insures prompt deliveries of export orders to all parts of the world.

Write for plans, specifications and prices and Illustrated Catalogue

CHICAGO BRIDGE & IRON WORKS

Main Office: Chicago, U. S. A.

Branch Offices: New York and San Francisco, U. S. A.

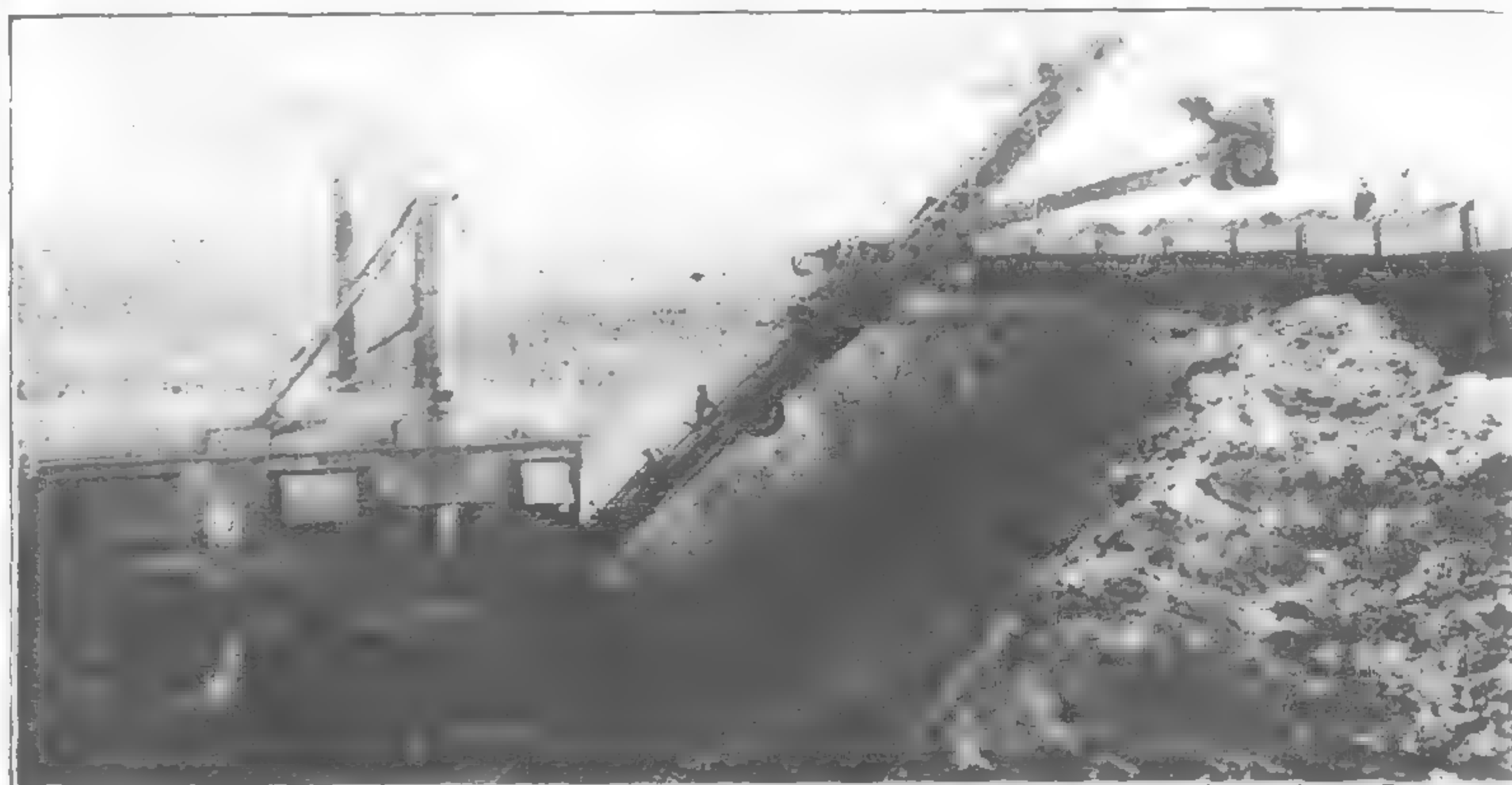
Factories: Greenville, Pa. (Pittsburgh District); U. S. A., Chicago, Ill., U. S. A., and Bridgeburg, Ontario, Canada

Responsible firms are invited to communicate with us in view of representing our interests in Shanghai, Manila and all important cities in the Far East

BUCYRUS

TRADE MARK REGISTERED

REVOLVING SHOVELS



150-B revolving shovel stripping 45 ft. of overburden of coal deposits at Fushan Colliers, South Manchuria.

This type of shovel has exceptional power and speed of operation. Its wide reach and high lift makes it possible to mine economically where other methods have proven unsuccessful.

We also build electric shovels, dragline, excavators, hydraulic and dipper dredges of all types and sizes.

AMERICAN OWNED & CONTROLLED & AMERICAN BUILT

BUCYRUS COMPANY

D. Couper Johnston & Co.,
 Bangkok, Siam
 Agents for Siam.

Main Office
 South Milwaukee, U. S. A.
 Cable Address: "Bucyrus"

McAlister & Co.,
 Ipoh, F.M.S.
 Agents for Malay States

Copenhagen
 Christiania
 Elsinore

A. O. ANDERSEN & Co.

New York
 Portland, Ore.
 Seattle

Cable Address: "PACAO"

Code: Bentley's A.B.O. 5th.

SAN FRANCISCO, CAL.

Shipowners and Merchants Importers and Exporters

Steel and Wooden Vessels and Motor Ships for Sale with Prompt Delivery.

Vessels for Charter and Sale suitable for Coasting or Trans-Pacific Trade.

Exporters of Steel, Lumber, Flour, Grain, Salmon, Fruits, Chemicals, etc.

Importers of Beans and Bean Cake, Rice, Copra, Vegetable Oils and Oil Seeds, Wood Oil, Peanuts, Albumen and Egg Yolk, and all Oriental Products.

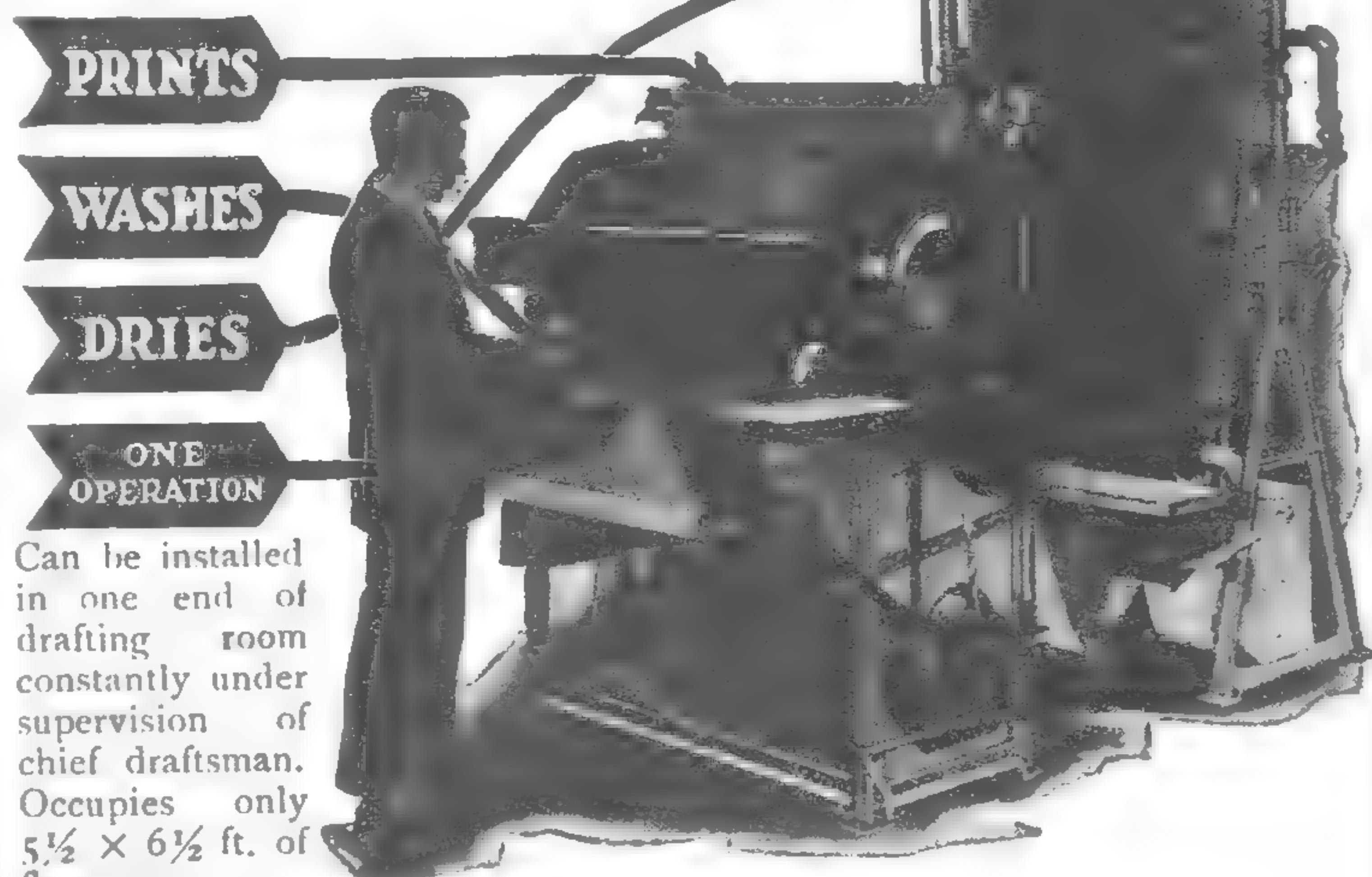
After the War our Scandinavian offices invite correspondence.

A. O. ANDERSEN & Co.

244 CALIFORNIA ST.

SAN FRANCISCO

THE PEASE PEERLESS BLUE PRINTING EQUIPMENT THREE MACHINES IN ONE



Can be installed in one end of drafting room constantly under supervision of chief draftsman. Occupies only $5\frac{1}{2} \times 6\frac{1}{2}$ ft. of floor space.

No open wash trays. No wet floors. No lines of dripping prints. No waste of sensitized paper. No noisy and unreliable friction disks. All speeds electrically controlled. Exposed paper is thoroughly washed, evenly dried, and delivered free from distortion or wrinkles. Printer may be used independently from washer and drier if desired.

Maximum output with one operator. 100 lineal yards per hour. This output with a consumption of but 7 Kw. electric energy and 50 cubic feet of gas per hour. If preferred, electricity instead of gas may be used for drying.

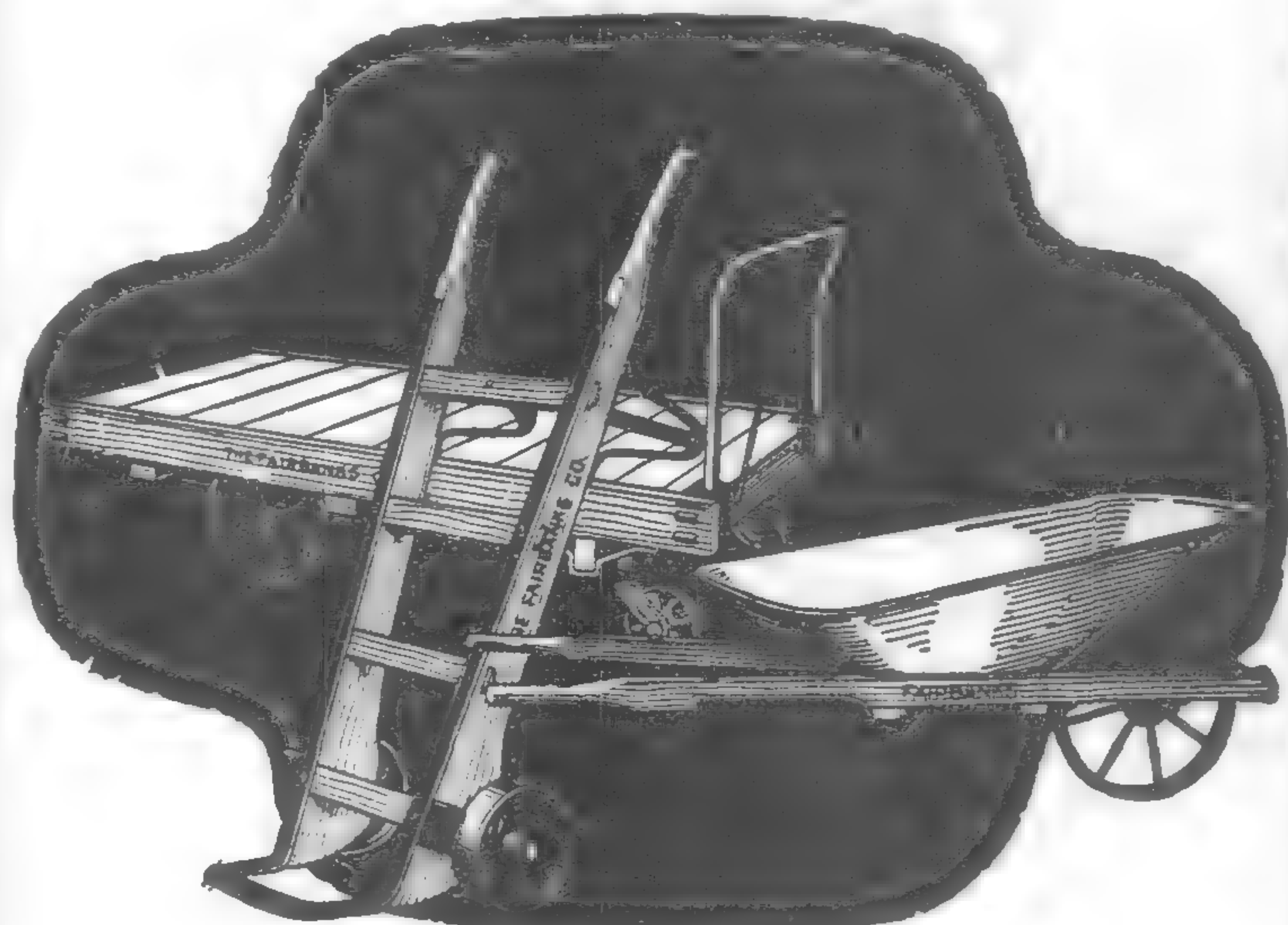
Packed carefully for export shipment. Write now for new catalogue K which fully illustrates and describes these machines.

Bentley's Code

THE C. F. PEASE COMPANY

235 Institute Place

Chicago, Illinois, U.S.A.



Handling Costs can be Reduced

That is, if you can get the equipment best fitted for moving material in your premises. The carrier that is best fitted is the

one that moves most material in a given time and with a minimum of labor.

FAIRBANKS Hand Trucks, Platform Trucks, Box and Case Trucks, Baggage Wagons, Push Carts, Drag Scrapers. Wheelbarrows—all steel, steel tray, wood handles, and all wood, for all purposes. The line is complete to the last detail. A large range of choice, enabling you to find just the thing best fitted for your needs. The FAIRBANKS stamp of approval, backed by more than 85 years of manufacturing experience, is your assurance of getting every time-and-labor-saving feature.

WEIGHING MACHINES

A complete line in all sizes and styles. FAIRBANKS SCALES are used in every industry, in every country.

ENGINES AND PUMPS

Engines—Gasoline, kerosene, and heavy oil. Full line of pumps; concrete mixers; sawing outfits; hoists; air compressors; electric lighting outfits; pneumatic water systems.

MACHINE TOOLS

Lathes—turret and engine; screw machines; drill presses—radials and plain; millers; planers; shapers; grinders; hack saws and small tools—chucks, dogs, tool holders, etc.

VALVES AND COCKS

Fairbanks renewable iron and bronze valves in globes, angles, gates and swing checks—for all services and pressures. Regrinding valves, Sphere blow-offs and vulcanized asbestos packed cocks.

POWER TRANSMISSION APPLIANCES

Complete equipment. Iron and steel pulleys; shafting; hangers; and highest grade leather, canvas and rubber belting; compression couplings; post boxes; clamps; friction clutches; pulley stands; bushings; gears; link belting; sprocket wheels; bucket elevators, etc.

FAIRBANKS

THE FAIRBANKS COMPANY

416-422 Broome Street,
New York, N. Y.

15 Mallow Street. Old St.,
London, E.C.

35 Station Street,
Birmingham, England

Vives 100,
Havana, Cuba

39 Robertson Street,
Glasgow, Scotland

50 Rue Claude Vellefaux
Paris, France

PUBLISHED ANNUALLY.

THE LONDON DIRECTORY

with Provincial & Foreign Sections,

enables traders to communicate direct with

MANUFACTURERS & DEALERS

in London and in the Provincial Towns and Industrial Centres of the United Kingdom and the Continent of Europe. The names, addresses and other details are classified under more than 2,000 trade headings, including

EXPORT MERCHANTS

with detailed particulars of the Goods shipped and the Colonial and Foreign Markets supplied;

STEAMSHIP LINES

arranged under the Ports to which they sail, and indicating the approximate Sailings.

One-inch BUSINESS CARDS of Firms desiring to extend their connections, or Trade Cards, of

DEALERS SEEKING AGENCIES

can be printed at a cost of £1.10.0 for each trade heading under which they are inserted. Larger advertisements from £2 to £16.

A copy of the directory will be sent by parcel post for £2, nett cash with order.

THE LONDON DIRECTORY CO., LTD.,
25 Abchurch Lane, London, E.C. 4.
England.

BUSINESS ESTABLISHED 105 YEARS.

Osaka Shosen Kaisha

(Osaka Mercantile Steamship Co.)

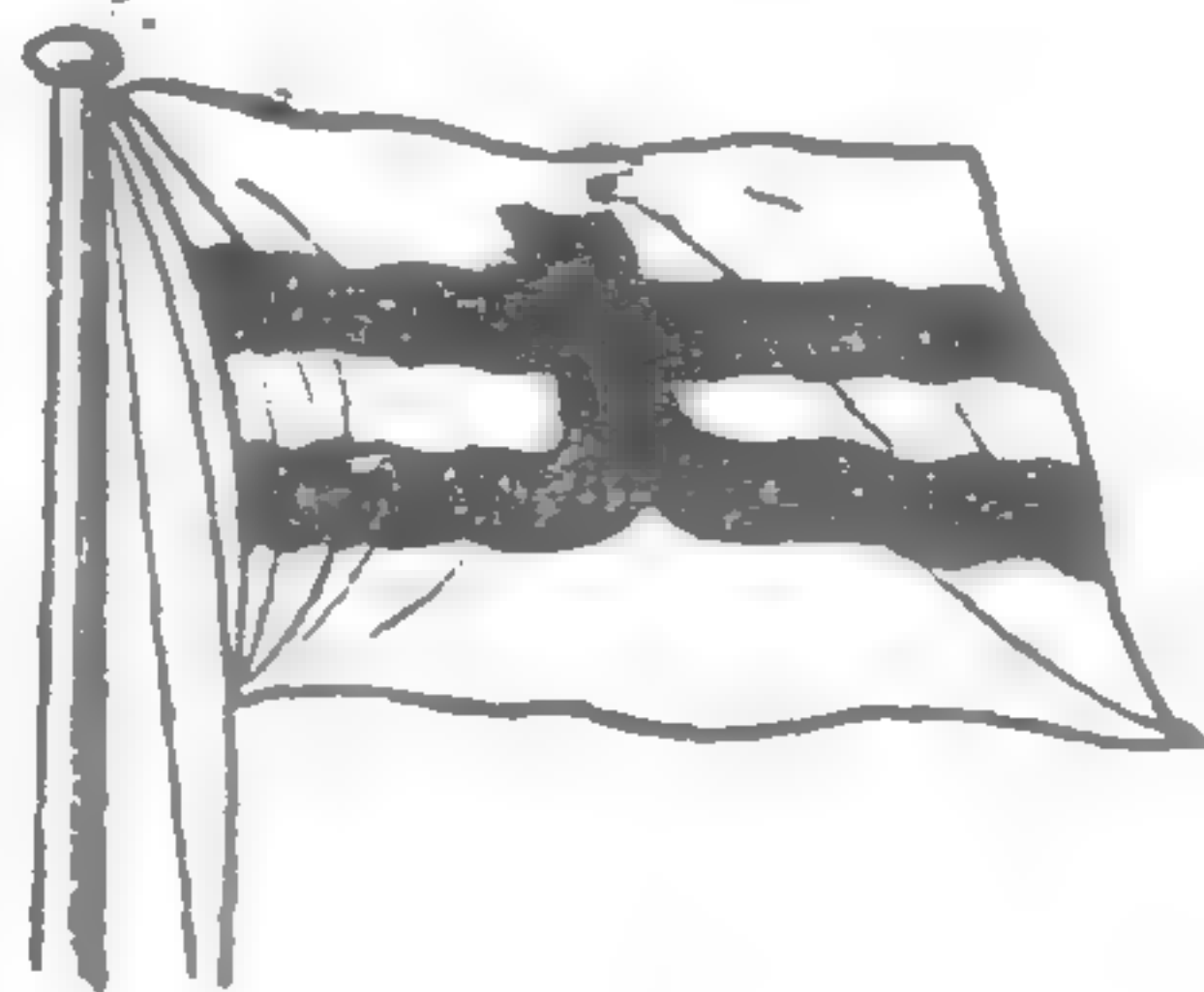
HEAD OFFICE: OSAKA, JAPAN

Cable Address: "SHOSEN, OSAKA."

Branches and Agencies at all the important ports in the World.

Codes Used: *AI*, A.B.C. 5th Ed.,

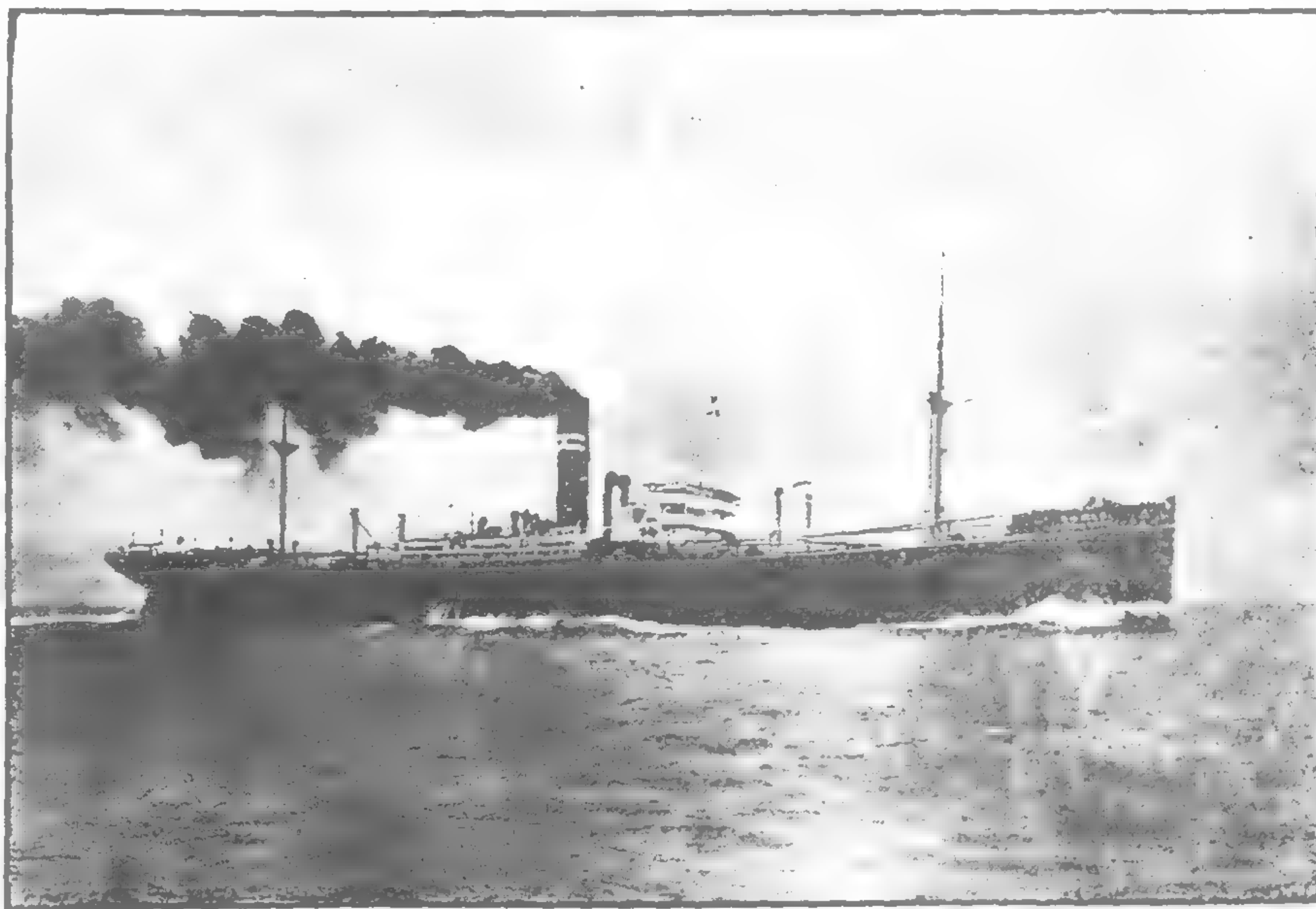
Scott's 10th Ed. & Bentley's.



Capital: Y. 50,000,000

Reserves: Y. 66,000,000

40 Regular Lines with a Fleet
of 500,000 Tons Gross.



PRINCIPAL REGULAR LINES:

JAPAN-EUROPE LINE (via Suez)—Monthly—Ports of Call: Yokohama, Kobe, Moji, Shanghai, Hongkong, Singapore, Colombo, Port Said, Marseilles and London.

BOMBAY, GENOA, MARSEILLES LINE:—Monthly—Ports of Call: Bombay, Djibuti, Suez, Port Said, Naples, Genoa and Marseilles.

JAPAN-BOMBAY LINE:—Fortnightly—Ports of Call: Yokohama, Yokkaichi, Osaka, Kobe, Moji, Hongkong, Singapore, Colombo and Bombay.

HONGKONG-PUGET SOUND LINE:—Fortnightly—Ports of Call: Hongkong, Manila, Keelung, Shanghai, Nagasaki, Moji, Kobe, Yokkaichi, Shimizu, Yokohama, Victoria, Vancouver, Seattle and Tacoma.

SINGAPORE-PUGET SOUND LINE:—Monthly—Ports of Call: Singapore, Hongkong, Manila, Keelung, Shanghai, Nagasaki, Moji, Kobe, Yokkaichi, Shimizu, Yokohama, Victoria, Seattle and Tacoma.

JAPAN-SOUTH AMERICA LINE:—Bi-monthly—Ports of Call: Yokohama, Kobe, Nagasaki, Hongkong, Singapore, Colombo, Durban, Cape Town, Rio de Janeiro, Santos and Buenos Ayres.

JAPAN-AUSTRALIA LINE:—Monthly—Ports of Call: Hakodate, Yokohama, Kobe, Osaka, Manila, Sydney, Melbourne and Adelaide.

JAPAN-JAVA LINE:—Monthly—Ports of Call: Osaka, Kobe, Moji, Keelung, Amoy, Hongkong, Manila, Sandakan, Tawao, Batavia, Sourabaya, and Macassar.

SERVICES TO CHINA.—

OSAKA—Dairen Line.—Semi-Weekly.

OSAKA—Tientsin Line.—6 Sailings per month.

OSAKA—Tsingtau Line.—2 Sailings per month.

YOKOHAMA—Dairen-Tientsin Line.—About 8 Sailings per month.

TAKAO—Tientsin Line.—2 Sailings per month.

Keelung-Hongkong Line.—Weekly.

Besides the above mentioned, Mail and Passenger Services are maintained by over THIRTY-FIVE REGULAR LINES, calling at all important ports in JAPAN, as well as STRAITS, DUTCH EAST-INDIES, FORMOSA, CHINA, KOREA, Etc., Etc.

COMPANY'S LOCAL OFFICES IN CHINA

AMOY, CANTON, FOCHOW, HANKOW, SHANGHAI, TIENTSIN, DAIREN, HONGKONG

The JANNEY-PENN Coupler



THE latest development of the Janney type of M. C. B. Coupling originally introduced and promoted by this company. This coupler has all the simplicity of the early type of the Janney coupler, and also has the up-to-date features of a "Lock-to-the-Lock," "Lock-Set," and a "Knuckle-Opener," and complies fully with all the requirements and recommendations of the M.C.B. Association of the U.S.A.

Lock-To-The-Lock—The locking pin cannot climb, being held in the locked position by a trigger the lower end of which projects into a recess in the coupler head, thus preventing accidental uncoupling.

Lock-Set—Lock setting is accomplished by the locking block resting on a seat on the inside wall of the coupler head when raised to the uncoupling position, from which seat it is dislodged on the closing movement of the knuckle in the act of coupling.

Knuckle-Opener—The knuckle-opener pushes the knuckle open to the fullest range of movement from a fully closed position, or from any partially open position, and its path of movement is such as to insure easy and complete opening of the knuckle.

The lock has an extra large bearing surface in contact with the knuckle in the coupler, being approximately five square inches. No portion of the locking block extends beyond the bottom wall of the coupler.

This coupler has the desirable feature of easy accessibility of parts, thus facilitating the making of repairs.

Furnished with various designs of rear end to suit different types of Draft Rigging.

Manufactured exclusively by

THE McCONWAY & TORLEY CO.
Pittsburgh, Pa., U. S. A.

Cable Address—Torley, Pittsburgh

CHINA AGENTS: Fearon, Daniel & Co., Tientsin, China

Andersen, Meyer & Co., Ltd., Shanghai, China

FURUKAWA

& COMPANY, LIMITED

IMPORTERS

AND

EXPORTERS

HEAD OFFICE: TOKYO

Branches and Agencies in China—

SHANGHAI

HONGKONG

HANKOW

DAIREN

PEKING

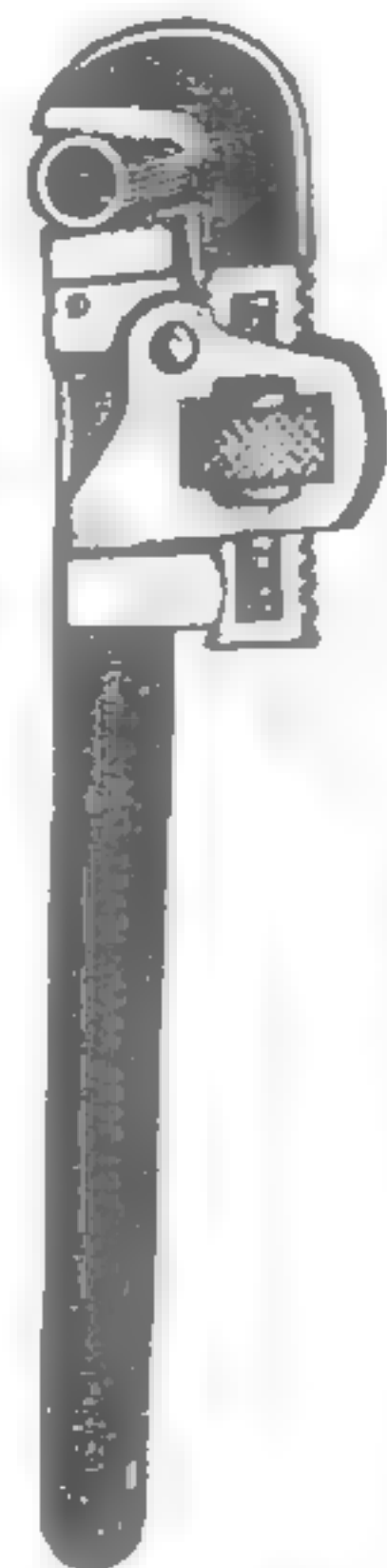
TIENTSIN

CHANGSHA

TSINANFU

TRIMO PIPE WRENCHES

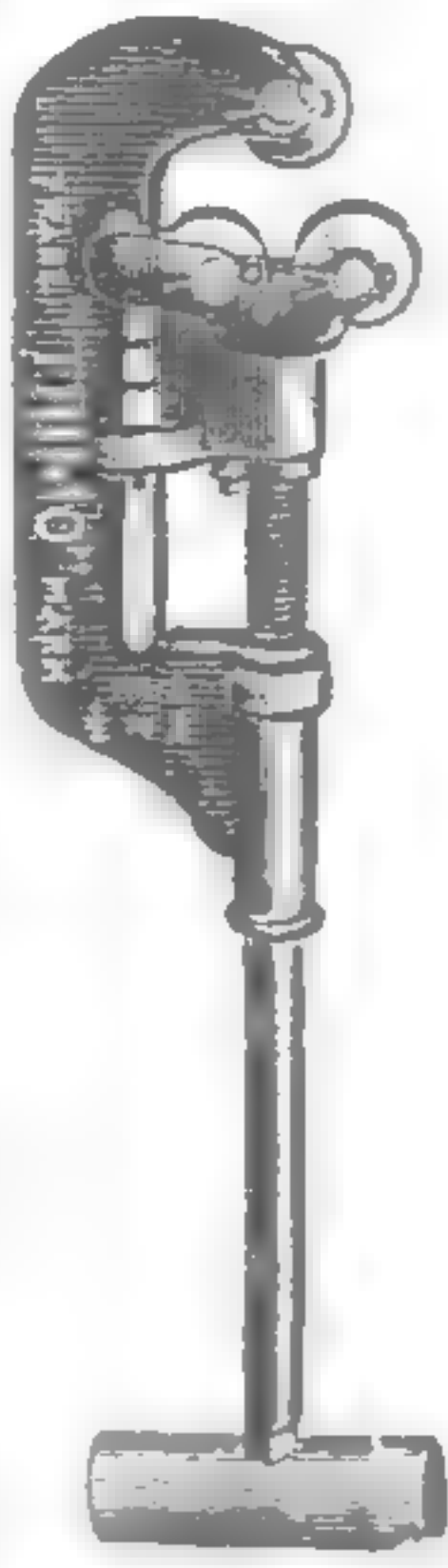
Have 25% More Service In Them



Pipe Wrench

Because of steel frames that do not break, of nut guards that keep the adjusting nut from being turned accidentally in close quarters, and inserted jaws in end of handle that can be removed when worn, saving the handle.

There are other superior points that every user of Trimont Pipe Wrenches knows—all for economy to the user.



Pipe Cutter



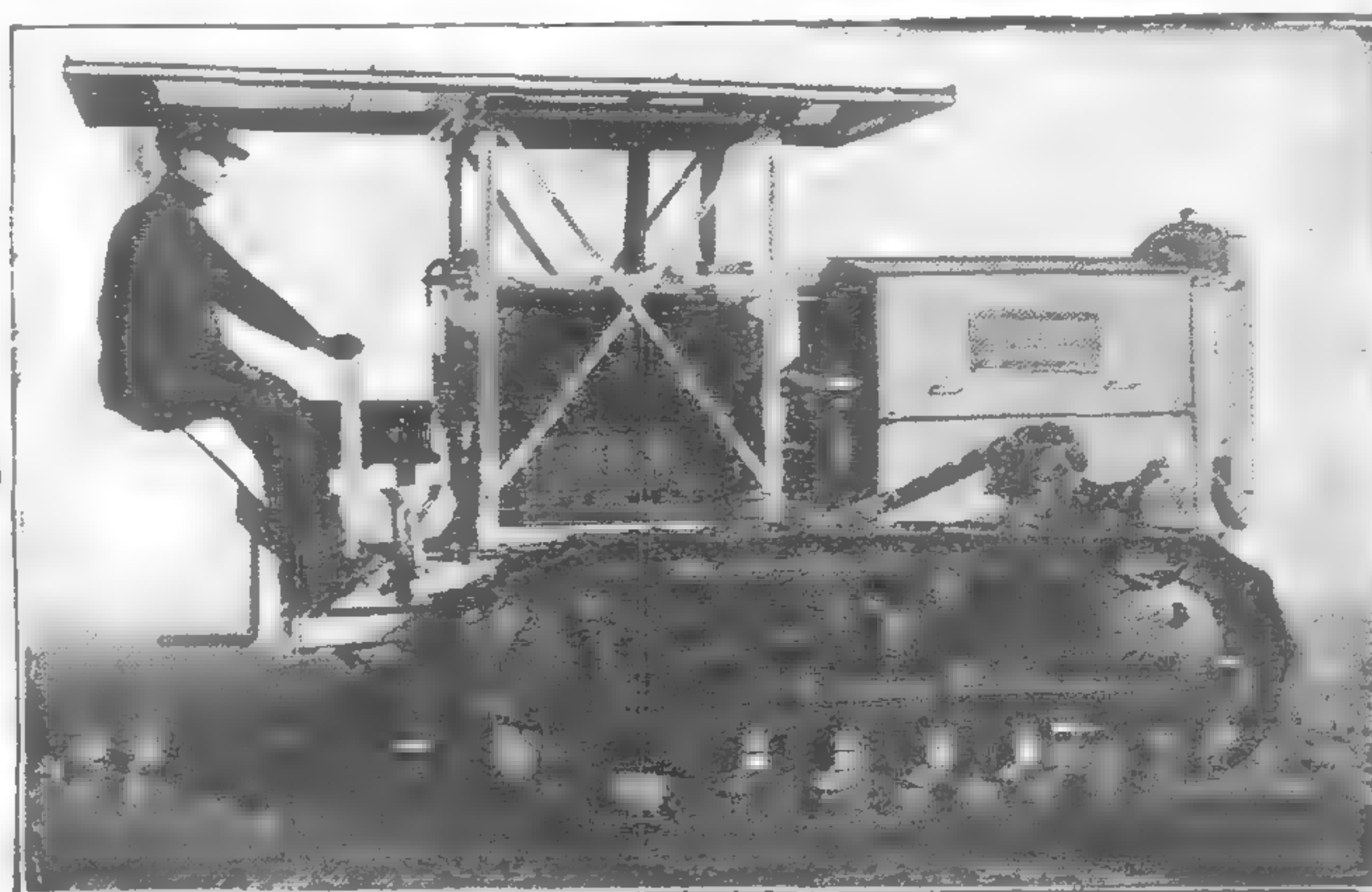
WITH FLAT-LINK OR CABLE CHAIN

Chain Wrench

Manufactured by

Trimont Mfg. Co.,

ROXBURY (BOSTON), MASS.



Master of Seasons, Soil, Weather

There is no soil too loose—too wet—too rough for the

AUSTIN TRACTOR

The multipedal traction carries it through mud, over stones, hills and across ditches. No spinning wheels—no miring—no slipping. The ground pressure is so light that it cannot pack the soil. It will pull plows, harrow, drill, binder, and besides field work will handle all belt work requiring up to 40 H. P. and road work requiring up to 20 H. P.

The Austin Tractor is built for service, of highest grade material throughout. Simple in construction—easy to operate—turns in its own length. Write for descriptive folders T-126-F. Also ask about Austin ditching machines, drag lines, concrete mixers.

WE MANUFACTURE

Trenching Machines	Wagon Loaders	Motor Flushers and
Backfillers	Cube Concrete Mixers	Sprinklers
Farm Tile Trenchers	Cube Pavers	Motor Sweepers and
Drag Line Excavators	Cube Hot Mixers	Sprinklers
Dry Land Dipper Dredges	Asphalt Mixers	Ditching Machines with
Levee Builders	Drum Mixers	Bank Sloping Attach-
Multipedal Tractors	Drum Pavers	ments
Wheel Tractors	Motor Road Oilers	Drainage Excavators

Agencies wanted in all principal cities. Responsible concerns wishing to do business direct with the manufacturer address as below, giving full particulars as to territory covered and how many years in business, also capital invested, class of goods handled, and references—including United States reference if possible.

F. C. AUSTIN COMPANY, Inc., Chicago, Illinois, U. S. A.

Cable Address: "Excavate," Chicago

Codes: Lieber's, A. B. C. Fifth Edition and Western Union

TAIWAN TETSUDO

(THE FORMOSAN RAILWAY)

Under the Direction of the Railway Bureau of the Government-General of Formosa.

HISTORY

The railway in Formosa under management of the former Ching regime of China had measured only 62 miles in all. Since the cession of the island to Japan, improvements have been introduced and additional railway constructed, so that to-day the total mileage of the railway running lengthwise of the island has increased to 277 miles and of the new line in the eastern part of the island, together with the very latest addition of 20 miles of the island line to 75 miles, totalling for the whole island 352 miles. This great improvement of the means of communication has been accompanied with remarkable developments in social and economic conditions of the island.

CONDITIONS OF THE COUNTRY ALONG THE RAILWAYS

The lengthwise railway line connects the two important ports of Keelung in the north and Takao in the south and traverses the principal cities and towns and the central regions for agricultural, commercial and industrial activities. Beauties of mountains and waters, places of note and historical ruins abound along the line to make the travel on it simply a pleasure. Japanese inns are everywhere, especially the railway Hotel at Taipei is a magnificent one of complete equipments for the accommodation of Japanese and foreign travellers. Steamships can anchor alongside of the quay in both the northern and southern ports, so that the connections between land and water communications are excellent. The railway line in the eastern part of the island runs through newly opened regions where sceneries are beautiful and where also are inns for the accommodations of travellers.

LAND AND WATER, MEANS OF COMMUNICATION

Between most of leading railway stations in Japan proper and in Formosa the connections are maintained direct as the water between them are bridged over with the chains of regular service steamships of the Nippon Yusen Kaisha and the Osaka Shosen Kaisha. There are also the Keelung-Kobe and the Keelung-Yokohama steamship lines. As for the means of communication with China, Malay Peninsula, Java, Celebes, North Borneo, and Philippine Islands, there are the Keelung-Hongkong line and the Takao-Canton line for South China and the Takao-Tientsin line for North China. There is besides a South Sea route to complete the accommodation of travellers.

INTERESTS OF OBSERVATION

The island of Formosa lies midway of communications between Japan and South China and also Malay Peninsula, Dutch East Indies, British Borneo, and Philippine Islands. Persons who are interested in the work to connect closer the relations between Japan and China for the benefit of both countries or are looking for new field of industrial activity, or who want to come in touch with the atmosphere of the southern land should direct their feet toward the island of Formosa. A pleasant ride on the railways may be taken while investigating the conditions of the whole island in order to gather materials for reference for the prosecution of one's plans and at the same time the results of the Japanese policy of colonization as well as of the planting of Japanese civilization in the island may be observed while enjoying the travel.



"The Financier"

(London) says:

Including a special supplement, a 52-page issue of "The North-China Daily News," which has just reached us by mail, is a credit to the journalistic enterprise and the mechanical resources of Shanghai. Incidentally, it is also a revelation of the bold and effective style in which business firms operating in the Far East keep themselves to the fore. The literary contents of the issue are interesting, for the articles deal with the commercial, industrial, scientific, financial, social and educational concerns of China. These are matters that claim attention outside the Celestial Empire. The issue is printed on good paper, attractively illustrated and well arranged.

The North-China Daily News

Brings you into close touch with Chinese Buyers

Because it has the largest circulation of any newspaper printed in English in the Far East.

Because it is the oldest foreign newspaper in the Far East, and has held the confidence of the Chinese for more than sixty years.

For Advice or Information on Things Chinese, address
The Secretary, North-China Daily News, Shanghai, China

The North-China Herald (weekly)

is made up especially for circulation in the interior of China, where mails are infrequent and postage expensive. It reaches all the Consular, Customs and Postal Officials and foreign residents in the interior.

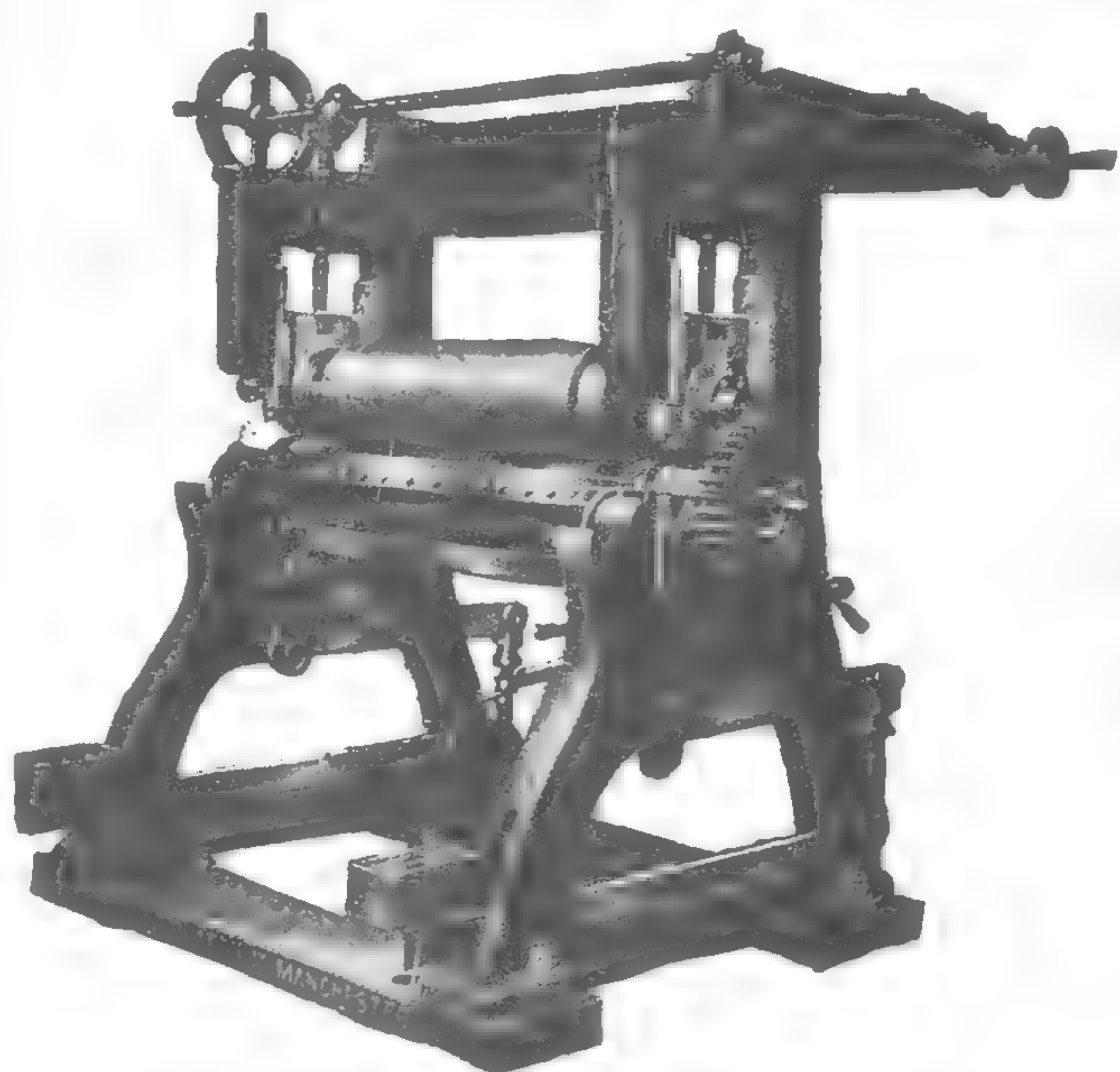
The North-China Desk Hong List

is the standard directory of China. It is published annually and contains business, residential and trade sections, etc.

Price G.\$7.50, including postage

Modern Machinery *for* Bleaching, Printing, Dyeing & Finishing.

Our new extensive Machine Shops, replete with every modern appliance, are capable of producing the highest class of manufacture.



Single Colour Printing Machine with Roller Bearings.

SOME SPECIALITIES:

- | | |
|---|--|
| <p>Gas Singeing Machines.</p> <p>Spray Damping Machines.</p> <p>High-Speed Stentering Machines.</p> <p>High-Speed Beetling Machines.</p> <p>Open Width Bleaching Machinery.</p> <p>Duplex and Intermittent Printing Machines.</p> | <p>Mather Kiers.</p> <p>Open Soaping Ranges.</p> <p>Mercerising Ranges.</p> <p>Dyeing Machines for Cops, Cheeses
Hanks, Raw Cotton, etc., and</p> <p>Calenders for all Purposes.</p> |
|---|--|

Mather & Platt, Ltd.

MANCHESTER & LONDON, ENGLAND

Telegraphic Address: "MAHOGANY."

ESTABLISHED 1837.

Telephones: 6140 Central (3 lines)

J. & A. STEWART, Ltd.

Glasgow Veneer, Saw and Moulding Mills,

KELVINHAUGH STREET, GLASGOW,

IMPORTERS OF

ALL KINDS OF HARDWOODS

Large Stocks of Seasoned Mahogany, American Plain, European and American Wainscot Oak, Walnut, Birch, Ash, all thicknesses.

RAILWAY & SHIPBUILDING CATERED for SPECIALLY.

Teak, in log and plank. Yellow Pine, Cypress and Canary Whitewood, Kauri Pine, Californian Redwood, Lignum Vitæ. Mouldings wrought to any pattern. Veneers, knife cut and saw cut. Plywood $\frac{1}{8}$ -in. to $\frac{7}{8}$ -in., all sizes.

EXPORT ORDERS PROMPTLY EXECUTED.

HIDACHI ENGINEERING WORKS



GENERAL VIEW OF HIDACHI ENGINEERING WORKS.

Location of Plant:

SUKEGAWA, IBARAKI PREFECTURE, JAPAN.

Sales Departments:

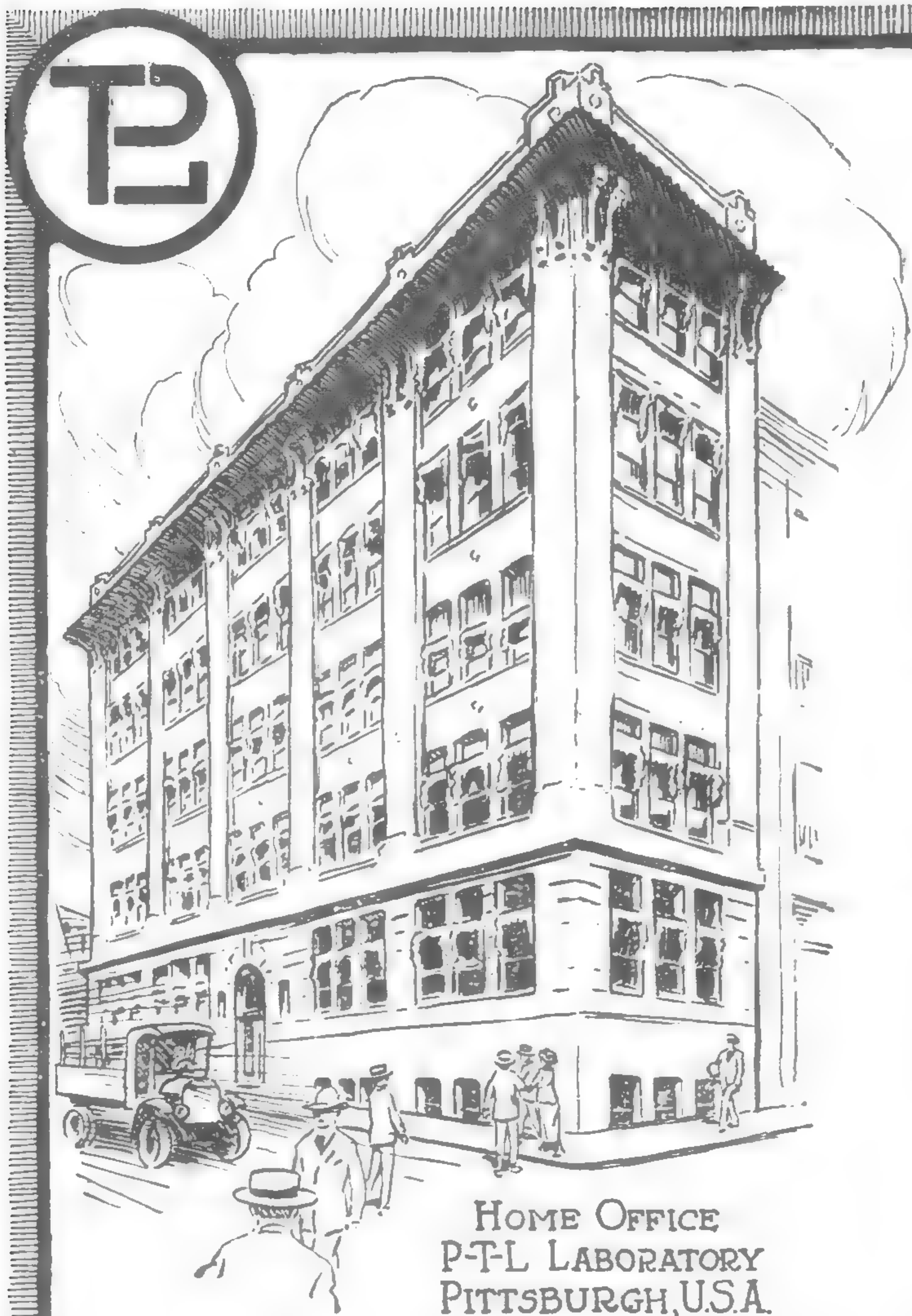
KUHARA MINING COMPANY OFFICES, 1 ITCHOME, YAESUCHO, KOJIMACHI-KU, TOKYO.

KUHARA MINING COMPANY OFFICES, 90 NICHOME, KITAHAMA, HIGASHI-KU, OSAKA.

Articles Manufactred:

DYNAMOS, ELECTRIC MOTORS, TRANSFORMERS, DISTRIBUTOR PLATES, TURBINE PUMPS, CRANES, WINCHES, AND VARIOUS KINDS OF HYDRAULIC WHEELS.

Also Agents for Hoden Oil, Used for Transformers.



Science in Shirtsleeves

The wheels of progress are turning too rapidly to permit of hit-or-miss methods in any branch of human endeavor. We are living in an age of specialized effort, when in the interests of economy and efficiency, all business is conducted on well defined scientific principles. This is true of the purchasing as well as the manufacturing end of industry.

Purchasers of materials cannot afford to risk uncertainties of manufacture, when placing their orders. They must be assured that when their purchases reach them, they will be as ordered; thus obviating any possibility of rejection growing out of faulty manufacture, failure to meet specifications, or careless workmanship, with the resultant

loss of time and misdirected effort, all of which cause loss of money and reputation.

To-day, science in all its branches is in its shirtsleeves cooperating with industry. By representing you at the point of manufacture the P-T-L-LABORATORY can assure you that the goods of any class of materials purchased by you will be made according to accepted standards of quality and workmanship.

Special tests of materials and finished products will be made to ascertain that your specifications and particular requirements are met exactly.

P-T-L stamped on your product means that it has met the requirements of your specifications and will meet the same quality of excellence and satisfaction in performance as has characterized the work of the Pittsburgh Testing Laboratory throughout the thirty-nine years in which it has been serving in this way thousands of the world's greatest purchasers of materials.

We will be glad to explain further what P-T-L-INSPECTION can do for you.

PITTSBURGH TESTING LABORATORY

Department F.: 50 Church Street, New York City, U.S.A.

JOHNSON-PICKETT ROPE Co.

MANILA, PHILIPPINES

Manufacturers of

PURE MANILA FIBER ROPE

In the following grades

"STANDARD MANILA"

(LAID IN OIL)

"NO. 1 COMMERCIAL"

OILED

"DRY WHITE ROPE"

Made of MANILA FIBERS without oil

"PATENT ROPE"

OILED



ONLY MODERN ROPE FACTORY IN THE PHILIPPINES

the home of Manila Fiber.

By careful selection of material and modern methods of manufacture, we produce a rope unexcelled in quality.

INSIST ON THE JOHNSON-PICKETT MAKE

Agencies in all the Principal Seaports of the East

JOHNSON-PICKETT ROPE CO.

MANILA,
PHILIPPINES

101 CALLE LARA

FOUNDED 1862

Masuda Trading Co., Ltd.

(MASUDA BOEKI KABUSHIKI KAISHA.)

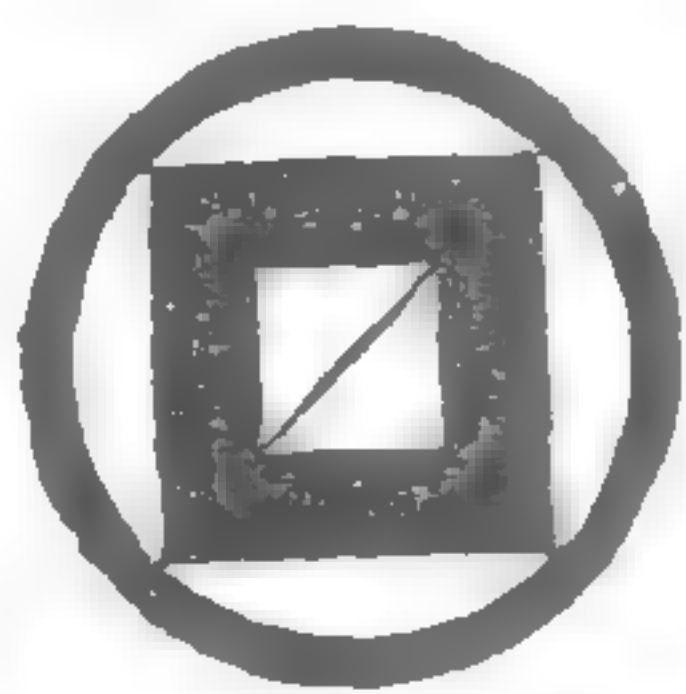
TRADE MARK

P. O. Box 68.

General Cable Address:

"MASUMASU"

Yokohama.



CODES USED:

A.B.C. 5th Edition Improved,
A 1, Scott's,
Western Union, Bentley's
Lieber's 5 letters,
Okay Zebra, Schofield's,
and Private Codes.

Principal Exports:

Timber, Sulphur, Raw and Refined Sugar, Rice, Barley, Oats and other Grains and Seeds, Beans, Peas, Maize, Wheat Flour, Potato Starch, Chemicals, Superphosphate, Beancakes, Vegetable and Fish Oils, Menthol, Tinned Salmon and Crab, Coal, Manganese Ore, Graphite, Wolframite, Copper, Copper Wire, Antimony Regulus, Spelter, Tin, Zinc Dust, Ferro-Alloys, Insulators, Electric Machinery and Instruments, Gas Fittings, Porcelain, Portland Cement, Toys, Rubber Goods, Silk and Cotton Goods, Glassware, Press Studs, Pearl Buttons, Vienna Chairs, Pencils, Antimony Wares, Acetic Acid, Sulphuric Acid, etc., etc.

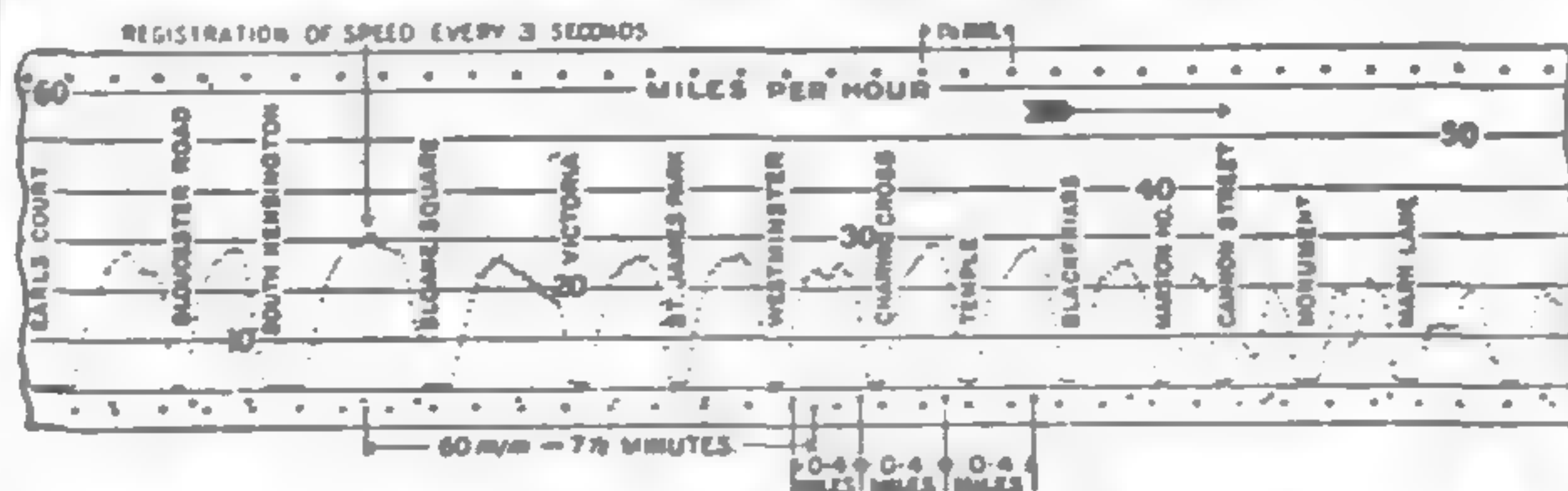
Principal Imports:

Raw Sugar, Wheat and other Grains, Wheat Flour, Beancake, Beans and other Cereals, Lead Ore, Zinc Ore and Concentrates, Copper Ore, Nickel Ore, Lead, Iron and Steel, Tin and Tinsolder, Sulphate of Ammonia, Nitrate of Soda and other Fertilizers, Chemicals, Woodpulp, Hops, Hides and Skins, Tallow, Wool-yarn and Tops, Bonemeal, Rape-cake, Raw Cotton, Indigo, Orange-shellac, Resin, Glue, Gelatine, Teak, Pine, Tapioca, Sago, Hessian and Gunny-bags, Rattan and Mat, Rubber, Caustic Soda, Carbonate of Soda, Soda Ash, All kinds of Machinery, etc., etc.

Head Office: 68 & 69 SHICHOME HONCHO, YOKOHAMA.

The Best Locomotive Speed Indicator & Recorder

REPRODUCED DIAGRAM (reduced) FROM INSTRUMENT IN SERVICE ON THE METROPOLITAN DISTRICT RAILWAY, LONDON.



HASLER

Hasler Telegraph Works, 26 Victoria St., London, S.W.

FACTS ABOUT CHINA

Fullest Available Information about the Ports of the Far East

Can be obtained in

The Ports of the Orient Number

Price \$3. Postage Extra

Address orders to the Circulation Department

THE FAR EASTERN REVIEW

5 Jinkee Road

Telephone Central 3473

Shanghai

THE HONGKONG & WHAMPOA DOCK CO. LIMITED,

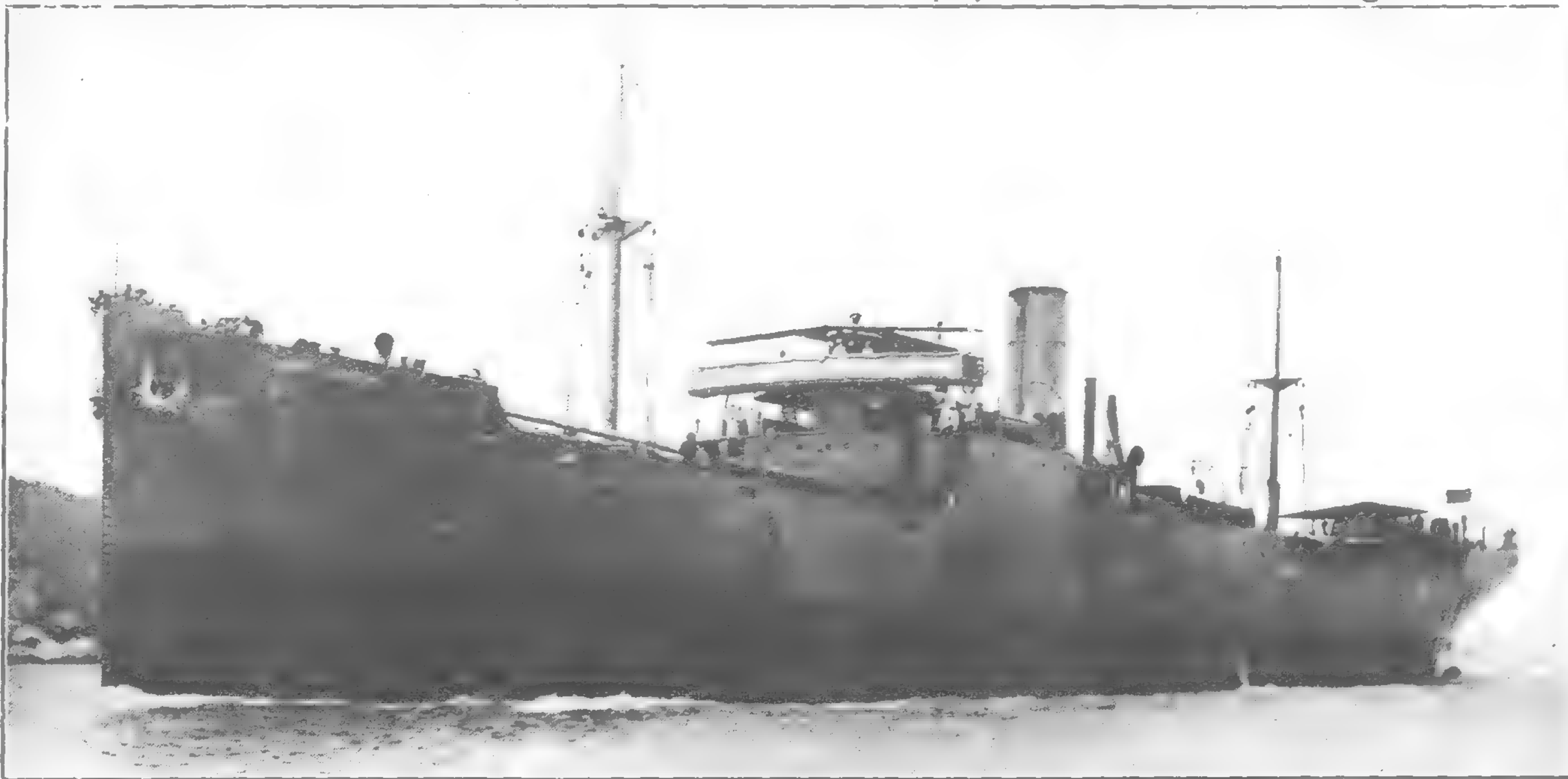
HONGKONG
BUILDERS AND REPAIRERS OF SHIPS AND ENGINES OF ALL KINDS

and Makers of

**BOILERS, IRON and BRASS CASTINGS, FORGINGS and CONSTRUCTIONAL
IRON WORK, RAILWAY ROLLING STOCK, Etc.**

*Dock Owners, Ship Builders, Marine and Land Engineers,
Boiler Makers, Iron and Brass Founders,
Forge Masters, Electricians*

The Company possesses Six Granite Docks and Two Patent Slipways and these are Equipped for Expeditious Work. The Plant is of the most modern type throughout. Ship Owners and Captains are assured that Docking and Repairs are carried out Promptly and at Moderate Charges.



S.S. "WAR SNIPER," 8,200 tons d.w.—5,175 tons gross. Built and engined by The Hongkong & Whampoa Dock Co., Ltd. to the order of the British Government.

Address Enquiries to the Chief Manager, R. M. DYER, B.Sc., M.I.N.A., Kowloon Docks, Hongkong

HEAD OFFICE: KOWLOON
TELEPHONE No. 55 K.

TOWN OFFICE: QUEEN'S BUILDINGS
TELEPHONE No. 20 HONGKONG

TELEGRAPHIC ADDRESS: "MANIFESTO" HONGKONG

Codes Used: A1; A.B.C., Fifth Edition; Engineering, First and Second Editions; Western Union and Watkins

UNION INSURANCE SOCIETY OF CANTON, LIMITED

(Incorporated in Hongkong)

With which are amalgamated
BRITISH TRADERS' INSURANCE COMPANY, LTD.
AND
THE CHINA FIRE INSURANCE COMPANY, LTD.

(Both incorporated in Hongkong)

JOINT ASSETS EXCEED \$30,000,000

HEAD OFFICE: HONGKONG
LONDON BRANCH: 9 Royal Exchange, E.C.
LONDON FIRE OFFICE: 10 George Yard, E.C.

BRANCHES AND AGENCIES THROUGHOUT THE WORLD

Marine, Fire, Accident, Motor Car, Householder's, Burglary, Guarantee, Workman's Compensation, and all other classes of Insurance, except Life.

C. MONTAGUE EDE,

General Manager.

STANDARD OIL COMPANY OF NEW YORK

26 BROADWAY, NEW YORK

*BRANCH OFFICES IN PRINCIPAL CITIES OF
Netherlands India, Straits Settlements, Philippine Islands, China,
India, Indo-China, South Africa, The Levant, Japan and Siam*

Socony



Products

The Mark of Quality

Illuminating Oils

Lubricating Oils—

For lubricating all classes of machinery

Lamps, Stoves and Heaters

Motor Spirits—

For Motor Cars, Motor Boats, Flying Machines, etc.

Paraffine Wax and Candles

Road Oils and Material for

Road Building

Our products are prepared under the care of the world's foremost experts, so as to give the highest amount of efficiency.

THE PRODUCTS OF QUALITY, SAFETY AND ECONOMY

The Bank of the Philippine Islands

(ESTABLISHED 1851)

Authorized capital	...	...	...	...	P. 10,000,000.00
Capital fully paid up	...	...	...	...	6,704,600.00
Reserve funds	...	...	...	...	3,577,300.00

General Banking Business

Buys and sells exchange on all the principal cities of the world.

Interest allowed on fixed deposits and current accounts accepted on terms which may be had on application.

BRANCHES: ILOILO AND ZAMBOANGA

AGENTS:

LONDON: National Bank of Scotland, Ltd.

SPAIN: Banco Hispano-Americano

HONGKONG: Netherland India Commercial Bank

SAN FRANCISCO: Wells Fargo Nevada National Bank

NEW YORK: National City Bank, The Guaranty Trust Co., and Equitable Trust Co.

PARIS: Comptoir National d'Escompte

AUSTRALIA: Bank of New South Wales

SHANGHAI: Bank of Canton, Ltd.

CHICAGO: Continental & Commercial National Bank

JAPAN: Yokohama Specie Bank, Ltd., Bank of Taiwan, Ltd., and Sumitomo Bank, Ltd.

E. SENDRES, President

No. 10 PLAZA DE CERVANTES, MANILA, P. I.

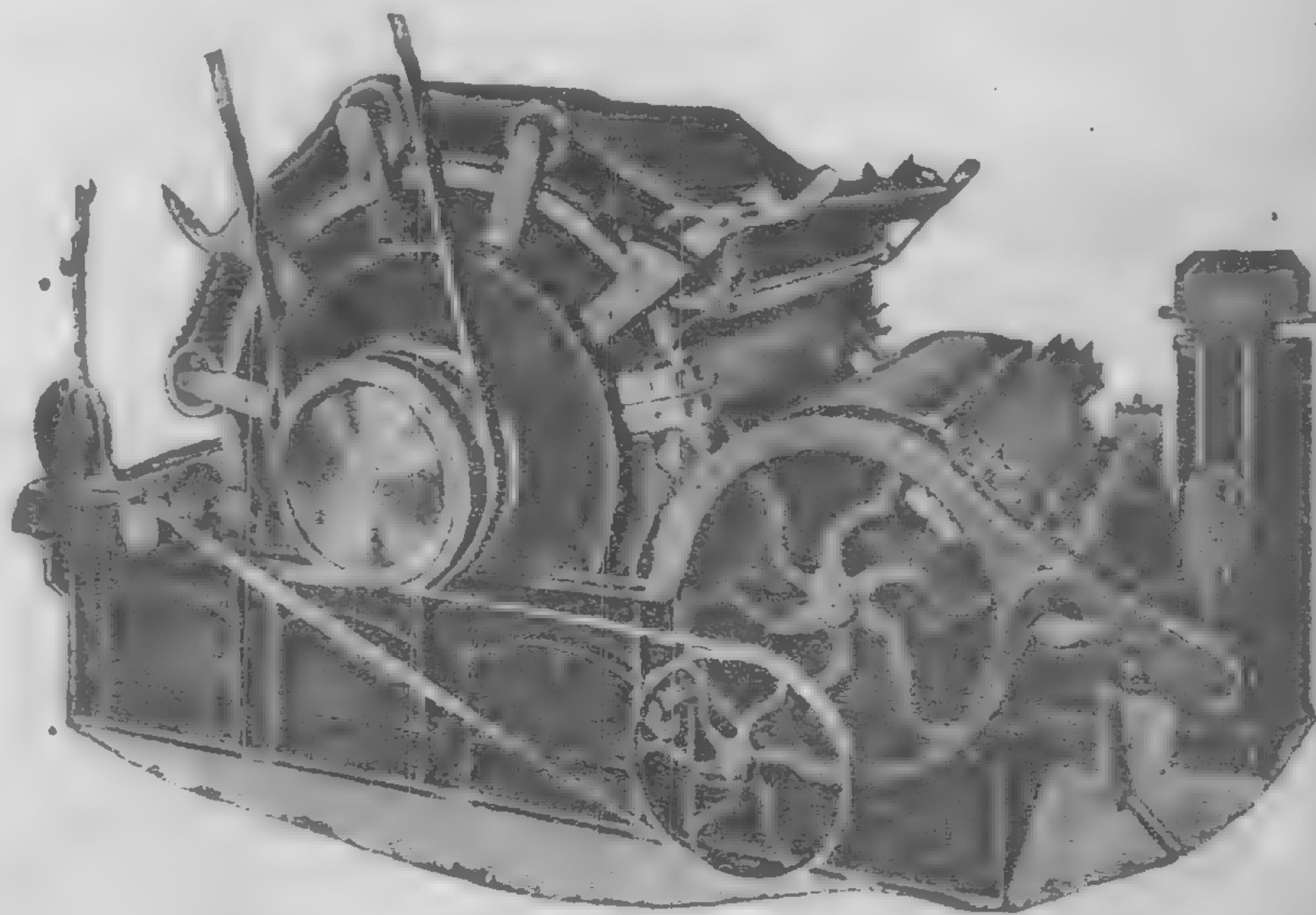
SACO-LOWELL SHOPS

BOSTON, MASS., U.S.A.

**COMPLETE EQUIPMENTS
FOR
COTTON MILLS**

**LARGEST BUILDERS OF
TEXTILE MACHINERY
IN AMERICA**

**SHOPS AT BIDDEFORD, ME.,
LOWELL, MASS., NEWTON
UPPER FALLS, MASS.**



REVOLVING FLAT CARD

AGENTS

ANDERSEN, MEYER & CO., LTD.

4-5 YUEN-MING-YUEN ROAD
SHANGHAI, CHINA



洋
行

AMERICAN TRADING CO.

茂
生

Head Office: 25 Broad Street, New York

Shanghai Office: 53 Szechuen Road

Japan Branches
Tokyo, Yokohama,
Kobe

General Cable Address: Amtraco

China Branches
Peking, Tientsin,
Hankow

GENERAL IMPORTERS AND EXPORTERS, ENGINEERS AND CONTRACTORS

*Special Facilities for Handling Mill and Plant Supplies, Chemicals and Match Making Supplies, Factory Supplies,
Iron and Steel Products and Railway Supplies*

AGENTS IN THE FAR EAST FOR: SUNDRY LINES

EDW. R. LADEW CO.—Leather Belting
SCOTT & BOWNE—Scott's Emulsion
H. K. MULFORD & CO.—Pharmaceuticals and Biologicals
GEO. H. MORRILL CO.—Printing Inks, Carbon Black
NATIONAL CASH REGISTER CO.—Store and Office
Systems.
AMERICAN STERILIZER CO.—Sterilisers and Disinfectors
MACEY & CO.—Steel Office Equipment
CERTAIN-TEED PRODUCTS CO.—Paints, Varnishes,
Enamels
D. MOORE & CO.—Hot Blast Stoves
NICHOLAS POWER CO.—Motion Picture Projectors

NATIONAL MILK SUGAR CO.—Marango Brand Sugar
of Milk.
SUNSET SOAP DYE CO.—Household Dyes;
DAVIS & GECK—Surgical Ligatures and Sutures
MOW SUNG BRAND—Specialties
WHITE FROST REFRIGERATOR CO.—Household
Refrigerators
EXCELSIOR MOTOR CYCLE CO.—Motorcycles and Side
Cars.
RECTOR CHEMICAL CO.—"Procaïne", a local anaesthetic
THOMAS A. EDISON, INC.—"Ediphone" Office Dictating
Machine

BUILDING MATERIALS

TRUSCON STEEL CO.
Reinforcing Steel
Pressed Steel
Steel Lath
Steel Sash

TRUSCON LABORATORIES
Water Proofing Paste
Masonry Paints
Steel Paints

BEAVER COMPANIES
Beaver Board
Black Board
Green Board

WEATHERPROOF COMPO ROOFING (SWASTIKA LABEL).

MACHINERY, MINING, ELECTRICAL, GENERAL

ALLIS CHALMERS MANUFACTURING CO., BUL-
LOCK ELECTRIC CO.—Flour Mills, Saw Mills,
Cement, Rock Crushing, Mining and Creosote Wood
Preserving Machinery, Power and Pumping Plants,
Hydraulic Turbines and Centrifugal Pumps, Electric
Generators and Transformers.

BROWN PORTABLE ELEVATOR CO.—"Ton-a-
Minute" Pilers, Elevators and Conveyors for Bagged
or Boxed Material. From Ship or Lighter to Piles
in the Godown.

ENGELBURG HULLER CO.—Rice Machinery.

ERIE CITY IRON WORKS.—Steam Engines, "Lentz"
Poppet Valve Engines, Fire Tube, Vertical and Hor-
izontal Watertube Boilers and Feed Water Heaters.

INGERSOLL RAND CO.—Rock Drills, Air Compres-
sors, Air-lift Systems for Water Supply, "Calyx"
Diamondless Core Drills, Riveting Hammers, Chip-
pers, and other Air Tools, Centrifugal Pumps, Turbo
Blowers and Beyer Barometric Condensers.

JEWELL EXPORT FILTER CO.—Open Type "Rapid"
Filtration Plants for Cities and Industries Requiring
Pure Clear Water, Pressure Filters for Industrial Pur-
poses and Swimming Pools.

KERR TURBINE CO.—Steam Turbines.

RAMAPO IRON WORKS.—Railway Switches and Frogs,
Switch Stands, etc.

STROMBERG CARLSON TELEPHONE MANUFAC-
TURING CO.—Telephones for all purposes.

B. F. STURTEVANT CO.—Exhaust and Ventilating
Fans, Blowers, Air Washers, Economizers, etc.

UNITED CIGARETTE MACHINE CO.—"Improved
Bönsack," "U. K." and "Universal" Cigarette Ma-
chines.

WOLVERINE MOTOR WORKS.—Kerosene Marine
Motors, 5 H.P. to 200 H.P.

YORK MANUFACTURING CO.—Ice and Refrigerat-
ing Machinery.

PAPER MILLS, FLOUR MILLS & TEXTILE
MILLS.—Complete Modern Plants and Details
of all kinds.

The Far Eastern Review

ENGINEERING

FINANCE

COMMERCE

VOL. XVI

SHANGHAI, JANUARY, 1920

No. 1

Proposed Railway Routes into Szechuan

A Discussion of the Merits of the Two Sole Possible Lines

ONE of the greatest and most important tasks that the Chinese Government has before it is to provide proper and adequate railroad facilities for the young Republic of China. With an area larger than the area of the United States of America and a population over three times as great China to-day has only 6,836 miles of railway including both Government and concession railways, as compared with more than 250,000 miles of railroad in the United States. Although

more than 10,000 miles of railway are now projected, or proposed, in China, there is very little or no actual construction work under way. But it seems certain that in the very near future work will be resumed upon a large scale and that the next decade may see more railways constructed in China than in any other country in the world.

One of the most important railway propositions in China to-day and one of the most interesting railway engineering problems in the world is that of building a line into the great



Showing one of the cliffs of the Lungmen Gorge on the Upper Yangtze

Province of Szechuan. Such a line would serve one of the richest, most populous, and productive provinces in all of China and would open up a veritable empire containing more than 218,500 square miles, an area larger than France, or Germany before the war, and almost one and one-half times as large as Japan.

In comparison with the United States of America, the area of the Province of Szechuan is *larger* than the combined area of the eleven States of Maine, New Hampshire, Vermont, Rhode Island, Connecticut, Massachusetts, New York, New Jersey, Pennsylvania, Delaware, and Virginia, while its population is but one-fifth less than the total population of the entire United States of America, and is greater than the combined population of all of the other thirty-seven States of the U.S.A. not mentioned above. The accompanying map of the United States of America shows the equivalent area of the Province of Szechuan and the portion of the United States containing a total population equivalent to that of Szechuan.

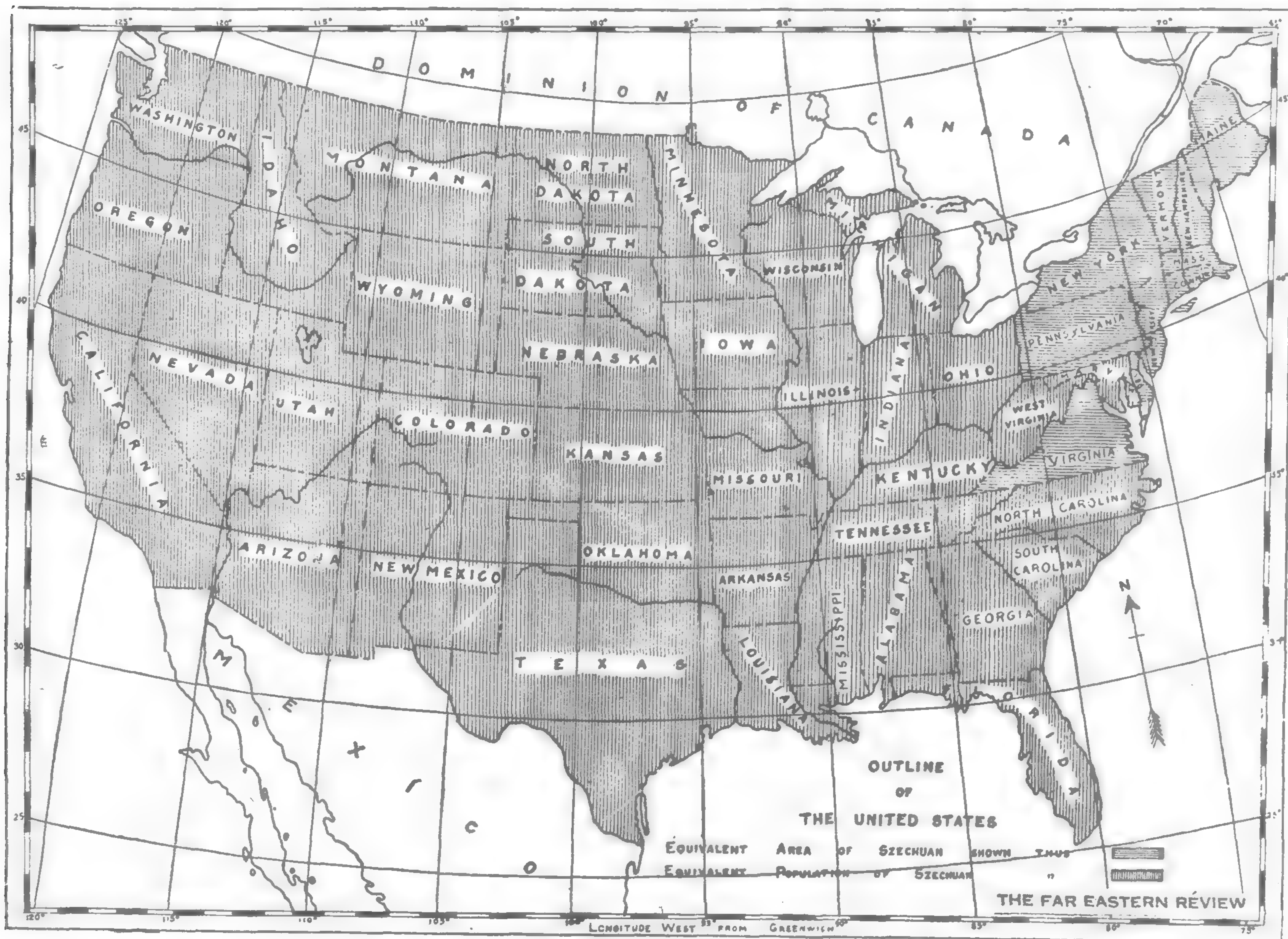
Two routes have been surveyed for railroads into the Province of Szechuan, with a view to connecting Chengtu, the Capital of the Province, with the present operated railways of the Chinese Government. The first of these routes, the projected Szechuan-Hankow Line, begins at Hankow, and, proceeding westerly follows up the mighty Yangtze River, passing through the difficult gorges of the Yangtze to Chungking, thence northwesterly to Chengtu, a total distance of 939 miles. This route was surveyed by

various foreign engineers under the Hukuang Line contract. For the sake of clearness in the following discussion, this route will be called the Yangtze River Route.

The new route into Szechuan, surveyed by American engineers under the contract between the Chinese Government and the Siems-Carey Railway and Canal Company, connects with the present-operated Peking-Hankow Line at Sinyangchow, a point 131 miles north of Hankow, and proceeding in a general north-westerly direction follows up the drainage of the Han River to a point called Tzeyang where the course turns southwesterly and crossing the Main Divide between Szechuan and Shensi enters the rich Province of Szechuan and after passing several large cities and many smaller towns and villages reaches Chengtu, its western terminus. The total length of this line is 895 miles. This route we will call the Han River Route, for the sake of convenience, in the comparison which follows.

In the FAR EASTERN REVIEW of July, 1918, the proposed new Han River Route into the Province of Szechuan was discussed in considerable detail. However, at that time, complete data relative to these surveys were not available, and it was, therefore, impossible then to compare this route with the Yangtze River Route with a view to determining which would best serve the needs of the country.

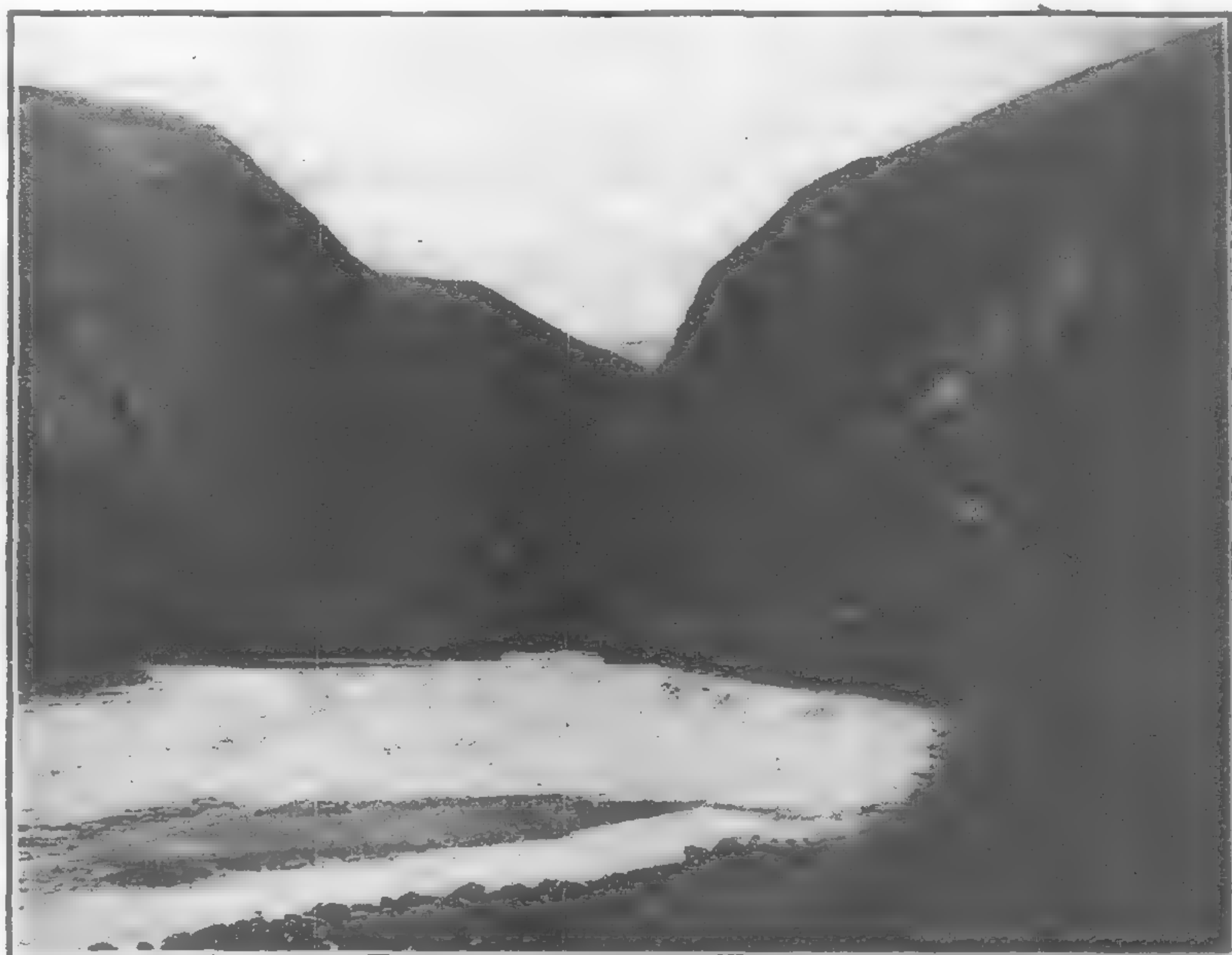
Now that more complete information is available regarding the surveys of the Han River Route, and particularly the surveys of that portion of the line across the Main Divide, it is of interest to consider the relative advantages



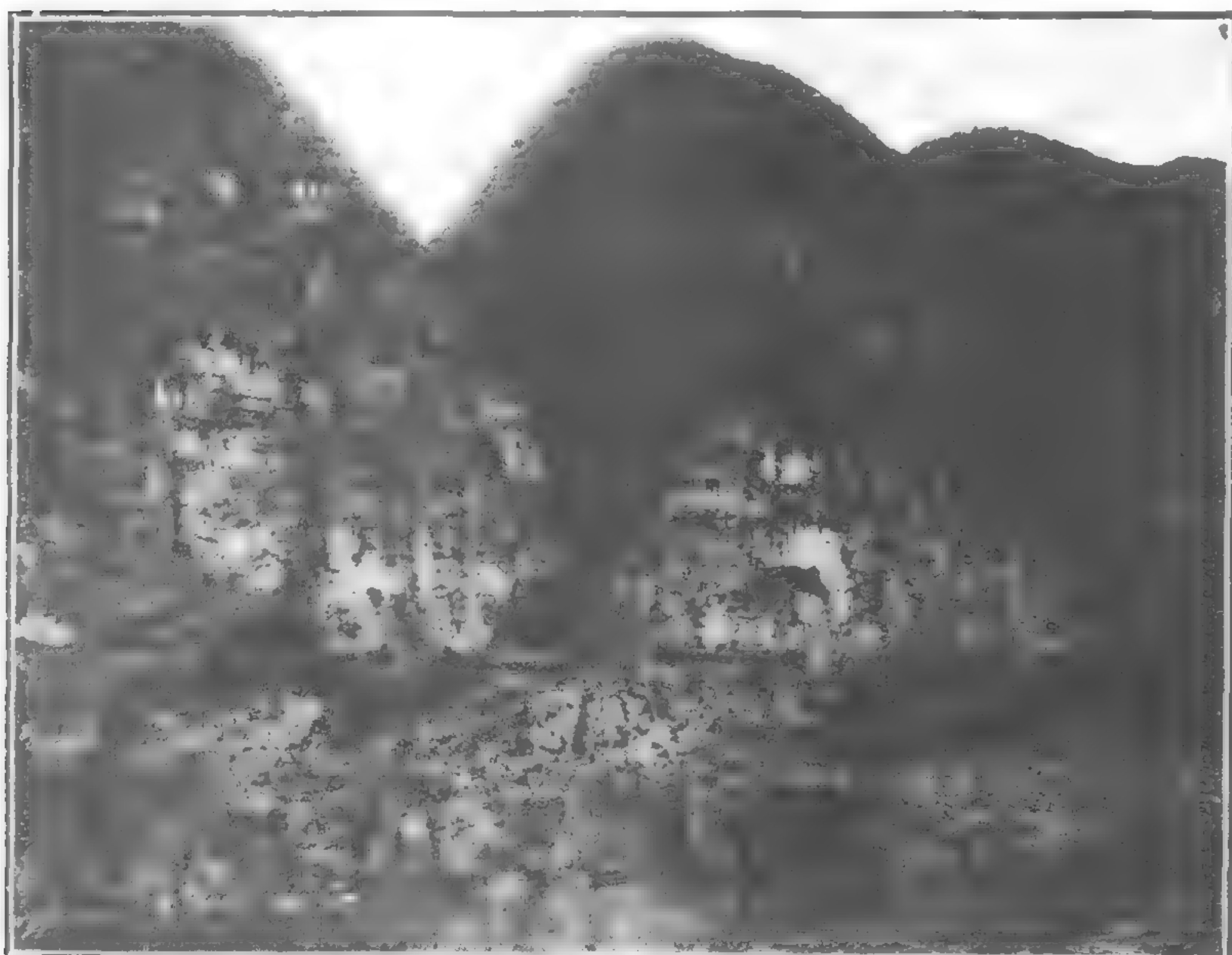
Map showing how the population and the area of Szechuan compare with those of the United States



Windbox Gorge, near Kweichowfu. Note the path for trackers of junks



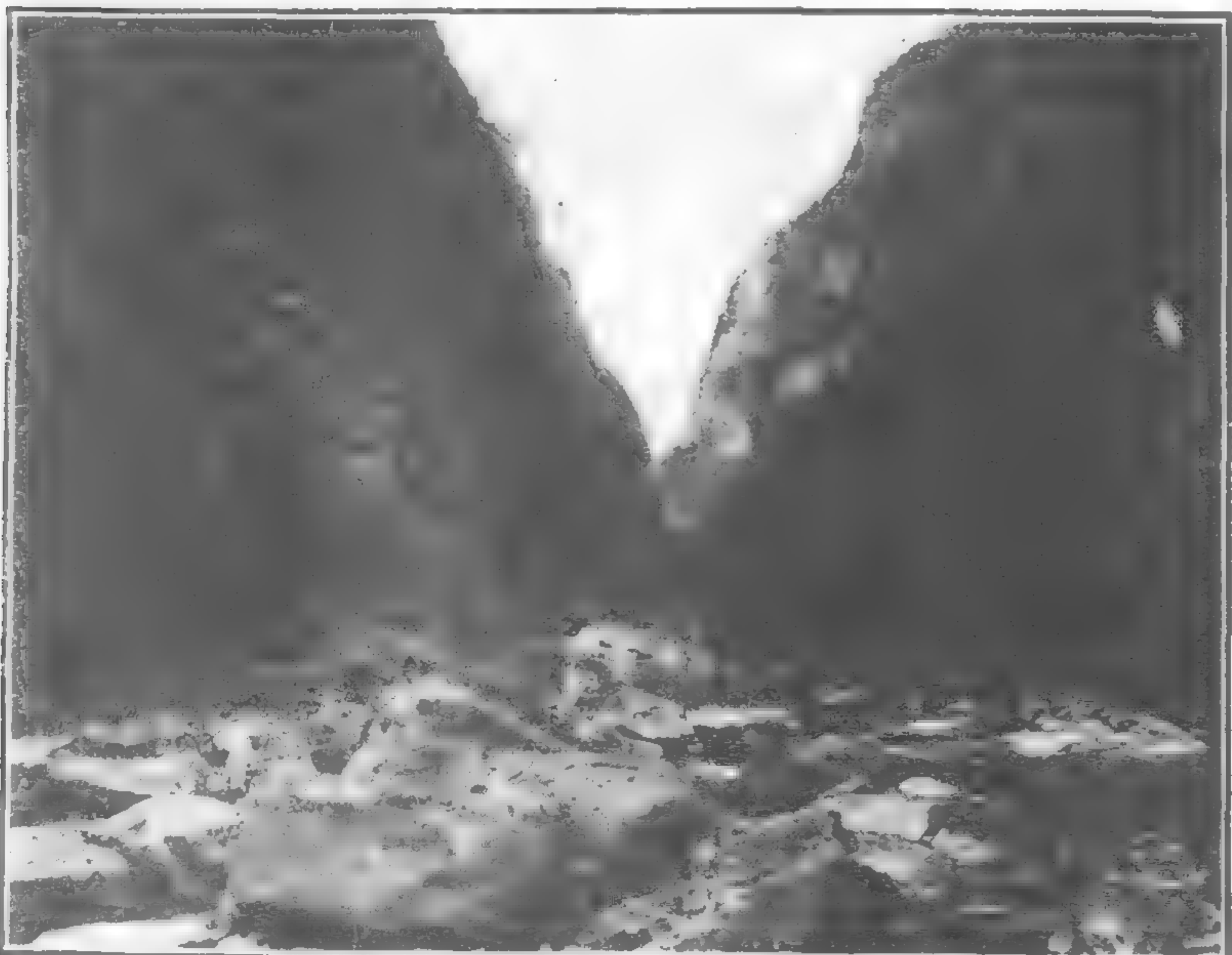
The Lungmen Gorge



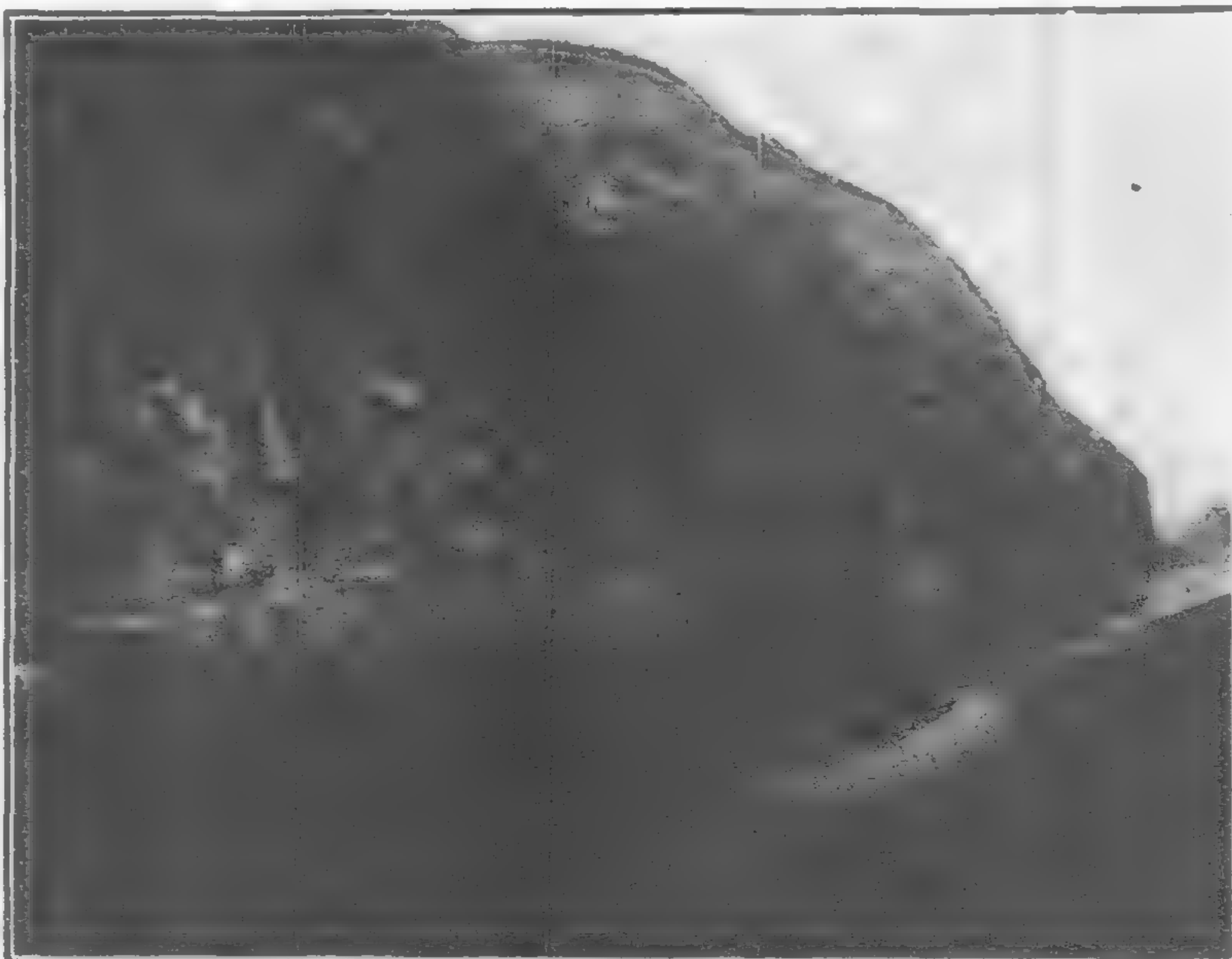
One of the Walls of the Wushan Gorge. Note pathway for trackers carved out of the solid rock



The Sanshi Gorge on the boundary line between the Provinces of Hupeh and Szechuan



Niukaumafai Gorge



Wushan Gorge

Views showing the difficult country in the Yangtze Gorges

and disadvantages of this route as compared with the Yangtze River Route, and particularly in view of the statements made in recent articles appearing in a contemporary publication concerning the Yangtze River Route.

The Yangtze River Route

Szechuan has often been described as a bottle, of which the Yangtze River is the neck—and the only means of ingress and egress. Surrounded on all sides by mountain



Ichang at High Water

ranges, Szechuan is indeed an inaccessible province. On the east the Yangtze River has cut its way out through the solid rock in a series of great gorges which for grandeur of scenery surpass anything in China and rival many of the scenic routes of the world. In its course to the sea, the Yangtze passes through these gorges for a distance of more than one

hundred miles. At many points the mountains rise almost perpendicularly hundreds of feet above the river. During the high water season the Yangtze rises rapidly and reaches a height of 175 feet above its low water level when it becomes a veritable cataract of stupendous size and power.

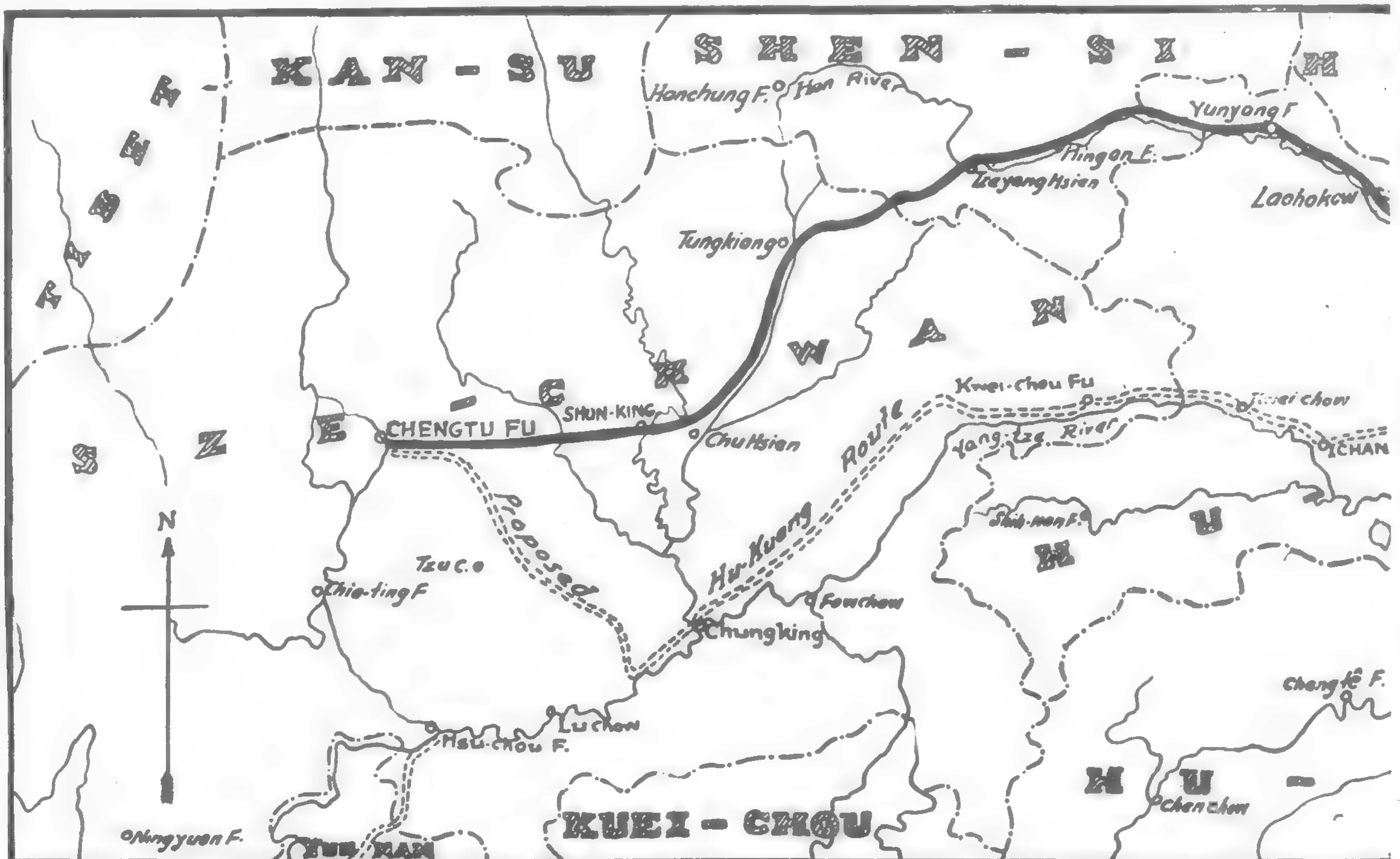
At the present time the Yangtze River affords the only means of transportation for the immense inland empire of Szechuan, but the numerous shoals, whirlpools and rapids in this river make navigation exceedingly dangerous and only certain kinds of small river craft undertake the trip through the gorges on account of the great hazards and perils involved. The history of navigation on the Upper Yangtze is filled with tragedy for this great stream has taken an awful toll of human lives as well as of boats and merchandise.

The survey of the Szechuan-Hankow Line follows up the Yangtze River and through the gorges at an elevation safe above high water. This, however, necessitates some very heavy and difficult construction.

As originally surveyed, it was proposed to construct a great tunnel, more than three miles in length—or 17,000 feet, to be exact—at a point on the Yangtze River called Nanto. This long tunnel as originally planned would be the largest single structure on the entire line, and the most expensive. Fortunately, however, the recent surveys made under the direction of Mr. C. J. Carroll, the present Chief Engineer of the Szechuan-Hankow Line, show conclusively that the big Nanto tunnel may be eliminated entirely and a more favorable and less expensive line obtained by following the general course of the river.

Comparison of the original tunnel route with the revised river route shows that the river route is far better, because:—

- (1) It reduces the length of line by 3,975 feet.
- (2) It reduces the maximum curve from 8 degrees to 6 degrees.
- (3) It reduces the total curvature by 1,029 degrees 58 minutes.



Map showing the two Projected Routes to Szechuan with

- (4) It reduces the maximum grade from 1.25 per cent. to 0.317.
- (5) It reduces the rise and fall by 767 feet.
- (6) It effects a saving of \$2,585,000 on construction of sub-grade alone and a total saving of \$3,226,000 on all items to be taken into consideration.

After leaving Nanto the route of the Szechuan-Hankow Line follows on up the Yangtze River to a point above Chungking, where it turns sharply to the northwest and leaving the Yangtze River proceeds cross-country to Chengtu.

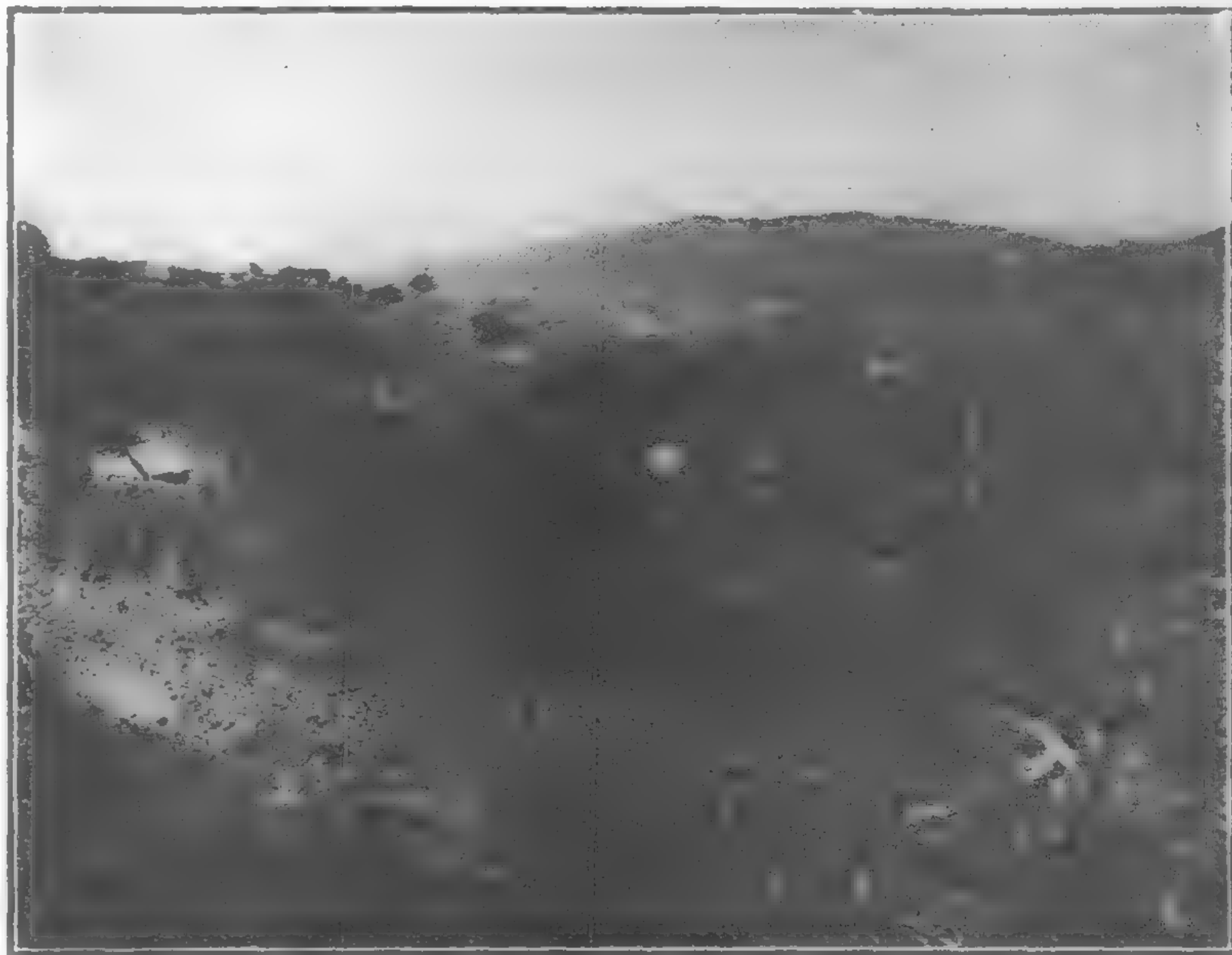
The accompanying photographs of views taken along the Yangtze River Route give a far better idea of the character of the country and the general conditions than any mere written description could possibly give. These views serve to make more clear the enormous difficulties that would be encountered on this route and the great natural obstacles which bar the way. Not that this route is considered impossible, for it is not; all the physical obstacles can be overcome, but it is a question of choosing the route which will best serve the country, taking into account the various factors which enter into the consideration of the subject.

Few, if any, more difficult surveys have ever been carried out than the surveys of the Szechuan-Hankow Line through the gorges of the Yangtze, and great credit is due the Engineers for the resourcefulness and ability shown in the performance of their work under most trying and most difficult conditions, for more than one life has been lost in carrying out these surveys.

The Han River Route

The idea of reaching Szechuan by the Han River Route is not new; on the contrary it is said that this route was first selected, but after a preliminary examination in which no suitable pass was found in the Main Divide which separates Szechuan from Shensi it was decided to attempt to enter Szechuan through "the neck of the bottle"—that is, via the Yangtze River Route. But notwithstanding the

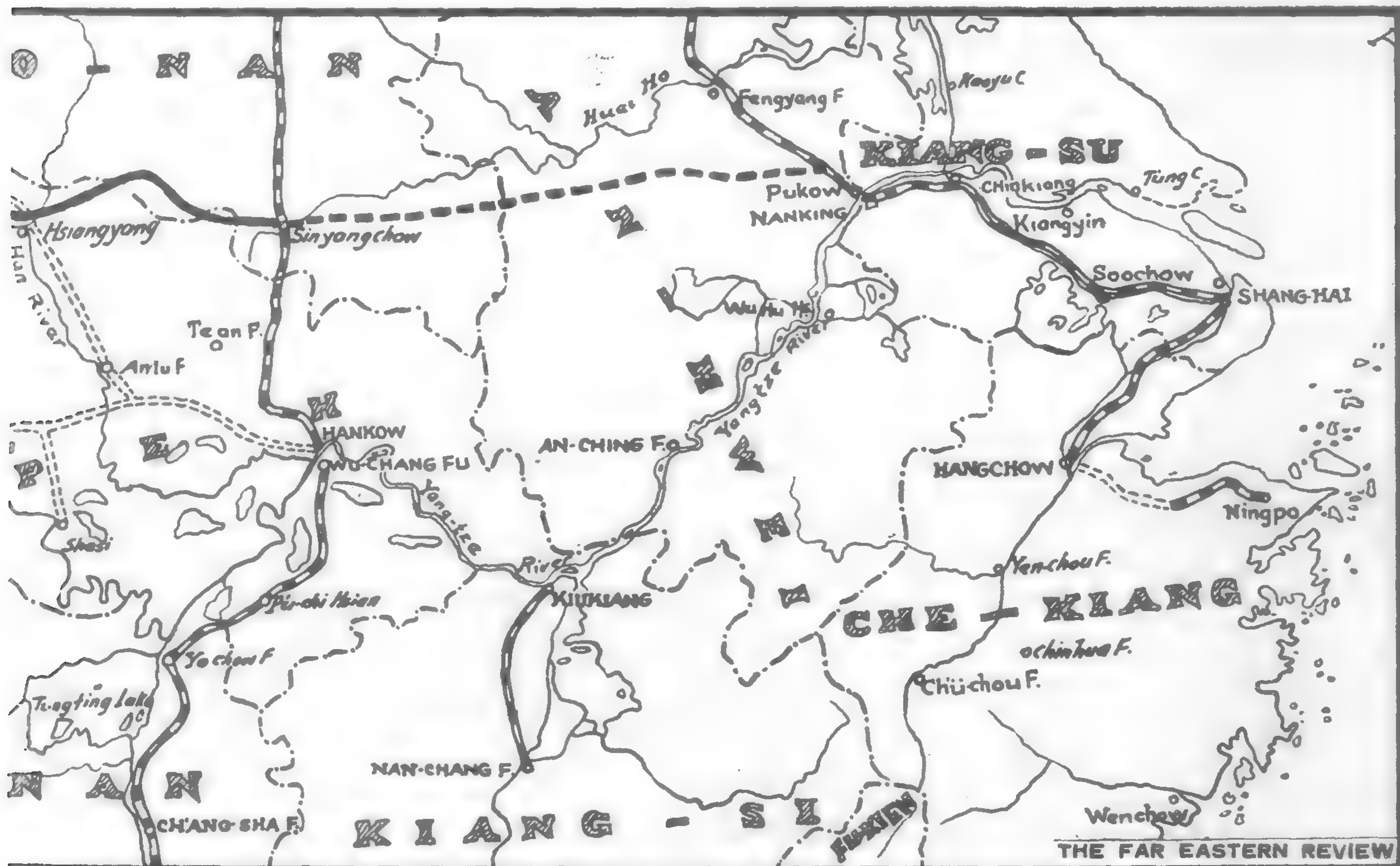
previous adverse reports on the Han River Route, the American engineers decided upon a thorough, careful, reconnaissance of the entire country, to ascertain if a satisfactory line could be obtained via this route, although



A Typical Town in the Red Basin of Szechuan

reconnaissance surveys aggregating 4,000 miles were made over this route and the wisdom of this course of action was justified by the finding of a suitable crossing of the Main Divide and by obtaining a very satisfactory route for a railroad through the most difficult part of the country.

While there are rough, rugged, sections of heavy country traversed by the Han River Route these do not compare with the similar sections of the Yangtze River Route where the natural obstacles, difficulties, and hazards are far greater and more serious.



emphasis upon the possible Direct Line from Shanghai



Cultivated fields on the Luho river, Szechuan



View of country near Chengtu, showing the arsenal in the middle ground



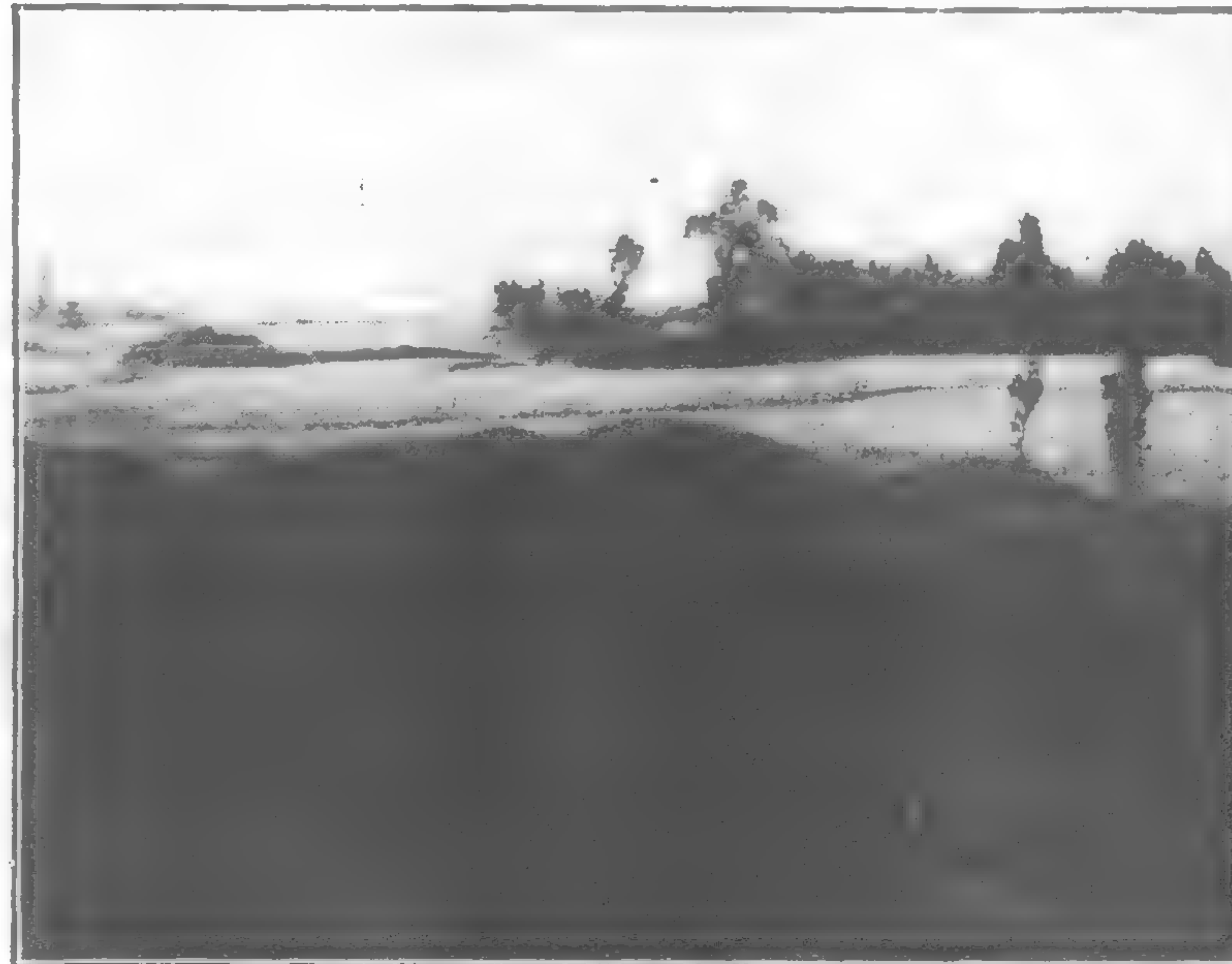
Rice fields in Szechuan



Agricultural country typical of portions of the Red Basin



The city of Tzuyanghsien



Typical cultivated country in Szechuan near Shahochiao

Views of typical Szechuan country through which any railway must pass

It should, however, be borne in mind that there is no royal road to Szechuan—there is no primrose path into this great inland empire. If there were it would long ago have been occupied by a main trunk railway which would to-day be busily engaged in transporting the enormous commerce of the vast province.

The accompanying photographs of views along the Han River Route illustrate only the worst part of the country, others of a general character were published by us in July, 1918. There are also submitted views of Szechuan—the “Promised Land” of China, as it might be called—a land of fertile fields and many harvests rich in agricultural, mineral and other resources. These views are intended to give an idea of the various sections of country which the proposed railroad would serve, and they are typical. They do not represent small isolated spots, they represent the largest and most extensively cultivated area of agricultural land in all of China.

Comparison of Yangtze River Route with Han River Route

In the following comparison of routes the figures given of the Yangtze River Route refer to the revised location made by Mr. C. J. Carroll, Chief Engineer, eliminating the Nanto Tunnel and effecting a saving of over \$3,000,000

in construction cost, to which reference has already been made.

The Yangtze River Route is 938.8 miles in length, while the Han River Route is 895.5 miles long, or 43.3 miles shorter than the Yangtze River Route. The maximum gradient of the Yangtze River Route is 1.98 per cent. as against 1 per cent. maximum grade on the Han River Route.

Comparing rise and fall: the Yangtze River Route has 6,902 feet rise and 5,182 feet fall, as against 6,585 feet rise and 4,919 feet fall on the Han River Route. The maximum curve on the Yangtze River Route is 8 degrees whereas a maximum curve of 12 degrees was used on the preliminary survey of the Han River Route.

The total estimated cost of constructing and equipping the Yangtze River Route is \$212,608,700, whereas the total estimated cost of constructing and equipping the Han River Route is \$177,211,600, or a difference of \$35,397,100 in favor of the Han River Route.

The Han River Route, therefore, has the following advantages:—

- It is shorter,
- Its maximum grade is less,
- Its total rise and fall is less,
- Its estimated cost of construction is less.



Typical gorge country near the Wushan Gorge

On the other hand, the maximum curve on this route can be made the same as that of the Yangtze River Route, as the topography of the country is more favorable along the Han River Route.

In the matter of operation; by reason of its location the Yangtze River Route would inevitably suffer a far greater loss from water competition than the Han River Route. It is quite probable that the present river transportation on the Yangtze will be developed and improved as time goes on to such an extent that some of the most potent objections which can now be raised against transportation on the Yangtze, such as slowness of movement and unreliability of the carriers, may be overcome to a considerable extent.

It, therefore, appears from all the information which has thus far been obtained from the surveys of these two routes, that the Han River Route is the better route, as regards both physical characteristics and cost of construction.

However, important as each of the factors which appear in the foregoing comparison are in the consideration of this subject, it is believed that the time has come in the development of the transportation facilities of China when a broader view must be taken and the future development of the transportation system of the country as a whole should be given its proper value in determining upon the construction of any new line of railway to serve a section of country. In other words, the effect and the bearing

which any proposed line into the Province of Szechuan would have upon the other Government railways, existing and proposed, and the way in which such a line would work into the general plan of railroad development, is worthy of serious consideration.

Looking at the situation thus broadly it is of interest and it is likewise important to consider the connections which both of these proposed lines will have to the seaboard and to consider which will provide the most direct, prompt and economical service in the transportation of the great tonnage of imports and exports into and out of the Province of Szechuan.

In the case of the Szechuan-Hankow Line, or Yangtze River Route, a transfer from railway cars to river boats will be necessary at Hankow. The distance by river from Hankow to Shanghai, the commercial metropolis of China, is 595.0 miles. The total distance from Chêngtu to Shanghai via this route—using the Szechuan-Hankow Line from Chêngtu to Hankow and using the Yangtze River boats from Hankow to Shanghai would, therefore, be 1,533.8 miles.

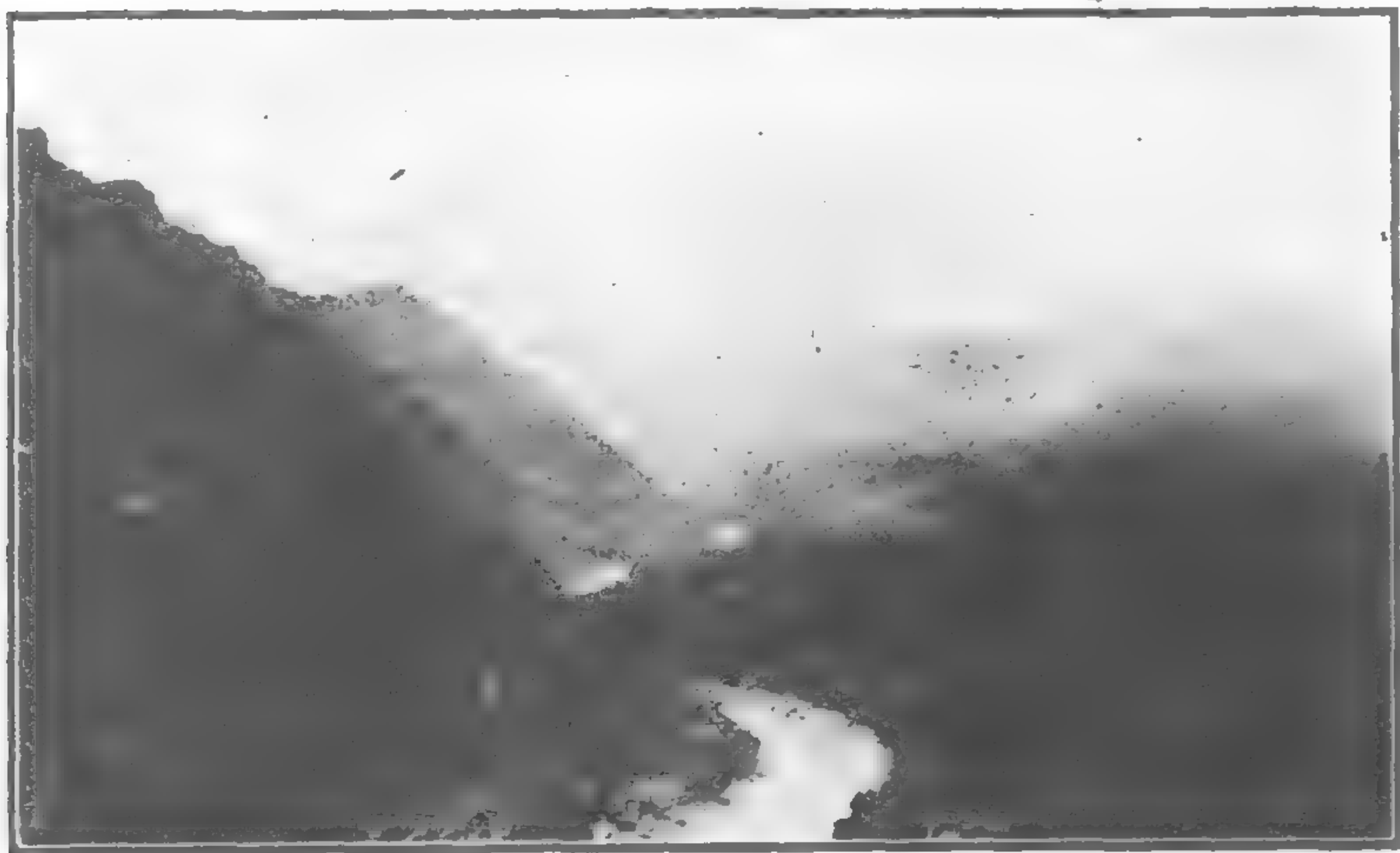
An alternate rail route would be via the Peking-Hankow Line from Hankow to Sinyangchow and thence via the proposed Pukow-Sinyangchow Line to Pukow, thence to Shanghai via the Shanghai-Nanking Railway. The distance from Hankow to Shanghai via this rail route would be approximately 616.5 miles, which added to the distance



Yehtan Rapids

from Chêngtu to Hankow viâ the Yangtze River Route, 938.8 miles, would make a total of 1,555.3 miles from Chêngtu to Shanghai by an all-rail route, using the Szechuan-Hankow Line and the other lines above mentioned.

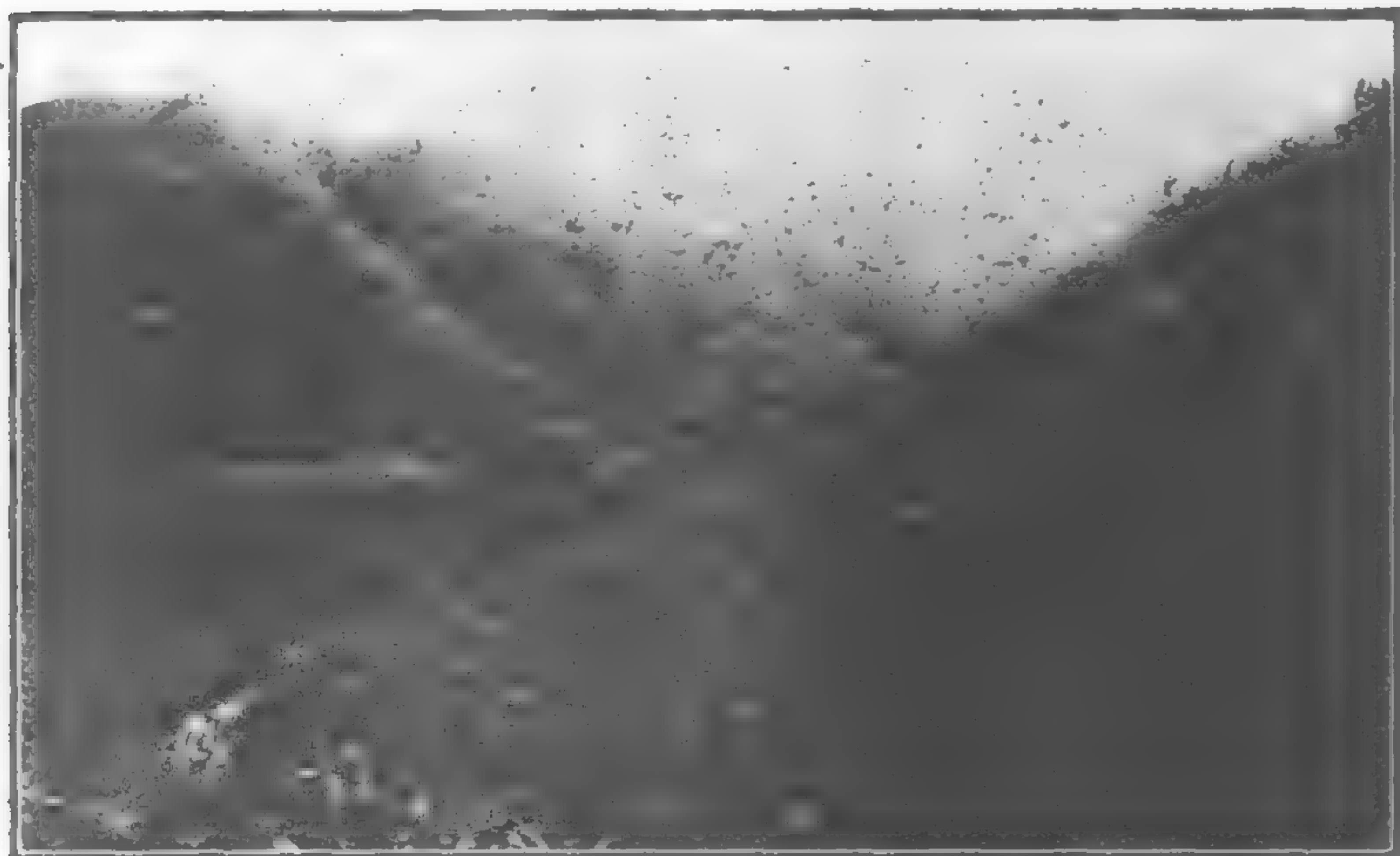
If, on the other hand, the distance from Chêngtu to Sinyangchow viâ our 1 per cent. Line (which is 4.6 miles longer than our 1.8 per cent.) be combined with the distance from Sinyangchow to Shanghai viâ the proposed Pukow-Sinyangchow Line and the present operated Shanghai-



Tungkiang River near Hangkou, Mile 540



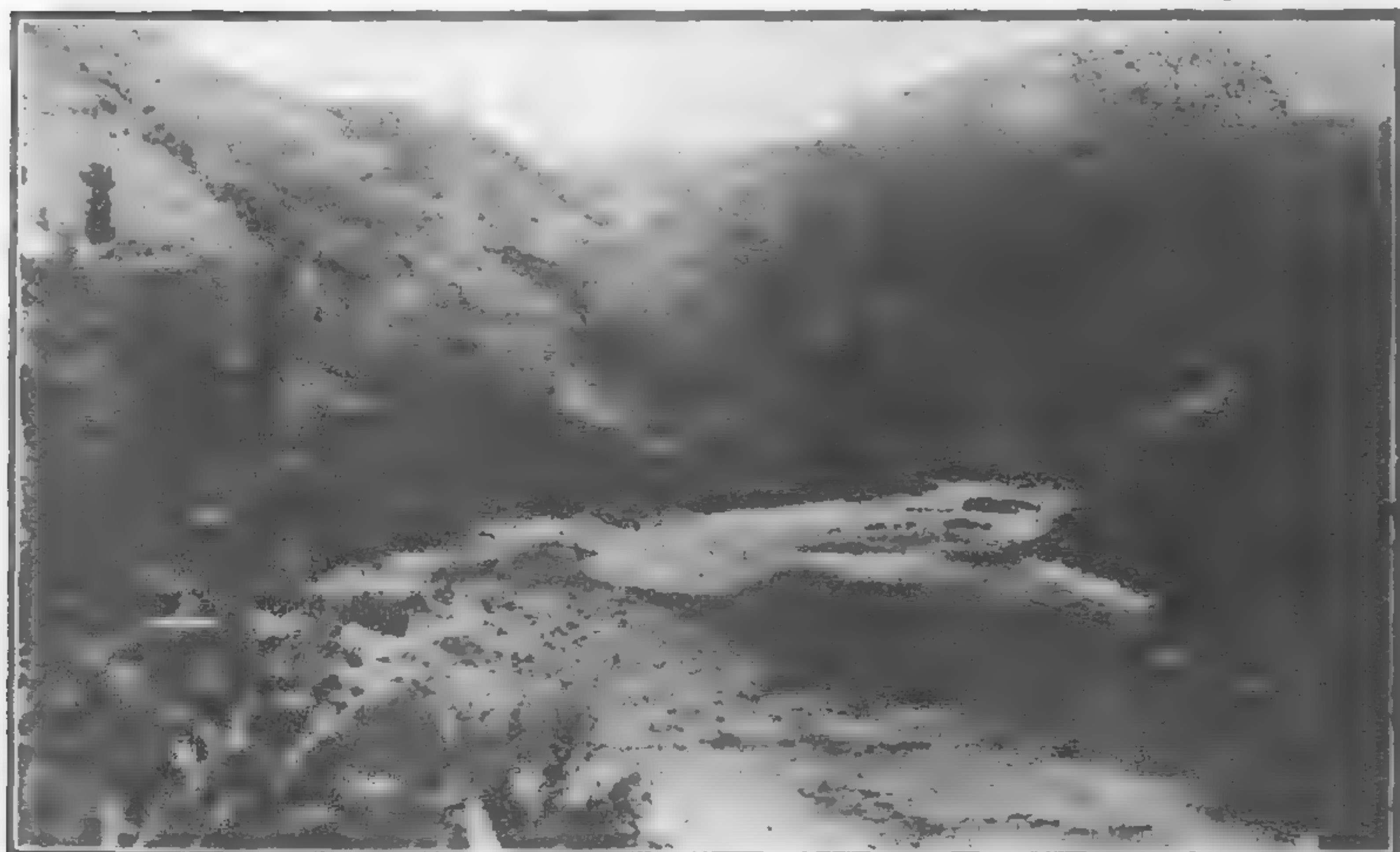
General Character of Country Forty Miles West of Chuhsien, Mile 739



Looking Southwest from Yutupa Summit, Mile 502



Country East of Nanchi



Near Chuyukuan, Mile 531



Looking Southwest from Divide Toward Chengkou

Views in the Mountains through which a Railroad can be built on the Han River Route

Nanking Railway, the total distance from Chêngtu to Shanghai will be 1,380.0 miles. The following table summarizes these figures in convenient form for reference:—

TABLE OF DISTANCES.

From	To	Via	Miles	Total Miles
Chengtú	Hankow	Szechuan-Hankow Line	938.8	
Hankow	Shanghai	Yangtze River	595.0	
Chengtú to Hankow via above River Route				1,533.8
Hankow	Shanghai	Peking-Hankow, Pusin & Shanghai-Nanking Rys.	616.5	
Chengtú to Hankow via above Rail Route				1,555.8
Chengtú	Singyangchow	Han River Route	895.5	
Singyangchow	Shanghai	Pusin & Shanghai-Nanking Railways	484.5	
Chengtú to Shanghai via above Route				1,380.0

The foregoing table indicates that the distance from Shanghai to Chêngtu via the Han River Route is 153 miles shorter than the Yangtze River Route, taking the shortest route from Hankow to Shanghai (the Yangtze River), to combine with the Szechuan-Hankow Line; if we take the all-rail route, the Han River Line would be 175 miles shorter. It, therefore, follows that the Han River Route would afford the most direct connection with Shanghai and the seaboard.

One of the most important features which should be given consideration in making this comparison of routes is the adaptability of the route to best serve the needs of the country—which route is best adapted, both from the financial standpoint and from the standpoint of national needs of China to best serve the territory designed to be served. The accompanying map of a portion of China shows the relative location of the two routes and their connections.

The Yangtze River Route is without doubt a very important line and one which China needs and should have for strategic and political reasons as well as for superseding or supplementing that great carrier, the Yangtze River, in transporting the enormous tonnage of Szechuan products and making the same available for the other Provinces of China and for the outside world.

The Han River Route, however, would serve the Province of Szechuan equally as well, if not better, and at the same time would provide a direct rail route (in conjunction with the proposed Pukow-Sinyangchow Line and the existing Shanghai-Nanking Railway) to Shanghai, the best ocean terminal in China and the largest receiving and distributing point in the Orient. The Yangtze River will always be a great artery of trade and will continue to carry a portion of the commerce of the country it traverses even



The Kungling Rapids on the Yangtze River

after the proposed Szechuan-Hankow Line has been constructed. On the other hand, the Han River Line will form a large part of a most important main East-and-West trunk line through the very heart of China in which there is at present no means of transportation.



A town in the Yangtze Gorges

Furthermore, according to all the data thus far furnished, and as indicated in the foregoing tabulated comparison of the two routes, the cost of construction of the Han River Route will be less and as the distance would also be less the transportation service which this line would render should be more prompt and more economical.

And considered in conjunction with the proposed Pukow-Sinyangchow Line—and it must be so considered in the larger aspects of the case—the Han River Line will render greater service to a greater population and a larger area of country than the Yangtze River Line. The Han River Route, therefore, seems better adapted to serve this territory both from the standpoint of national needs and from the financial standpoint.

The Han River Line is also of the greatest strategic value to the Republic of China and would prove a most valuable military asset to the Government in time of the nation's need.

From the political viewpoint this proposed line would provide a means of business and social intercourse between one hundred million people of the interior, who now have no means of intercourse with the people of the other provinces and the outside world; this would result in the development of a spirit of nationalism and a desire for greater national unity, the value of which to the Government and to the country would be incalculable in directing the affairs of the nation, and would prove a bulwark of strength to the Central Government in resisting any aggression from a foreign power. This spirit would be reflected in a keener interest in political matters, in better conditions of government and in greater progress along all lines of national advancement.

From the viewpoint of national economics—the development of material resources and the production and distribution of wealth—this proposed railway would be the great link in the chain of transportation, which will bind the East and West of China together, and which will make available the enormous natural resources of Szechuan and other tributary provinces, and will also make possible the import into these territories of large quantities of manu-

factured articles, machinery, and supplies of various kinds, of which these provinces are in need. The proposed railway would stimulate and build up a great commerce which would greatly enrich not only the provinces it would serve directly but indirectly the whole nation. Without an outlet such as railway facilities would afford the wonderful agricultural, mineral and other natural resources of Szechuan have remained locked up for centuries.

In the fall of 1917 when the supply of wheat was short all over the world, wheat sold for \$2.50 to \$3.00 per bushel in Shanghai, while at the same time in Szechuan it sold for 10 cents per bushel. Large quantities of wheat, and other grains, could have been exported if only the means of transportation had been available.

During the year 1916, there were *imported into China cereals* to the value of over \$48,000,000; yet China is an agricultural country and Szechuan is said to be one of the most productive, most intensively farmed agricultural sections in the world. Its agricultural products alone for the year 1914 amounted to over 16,000,000 tons valued at \$1,177,364,136.

Or, if we take coal for example: during the year 1914 China purchased from Japan more than 1,650,000 tons of coal valued at over \$11,850,000, of which Hankow and Shanghai consumed about one and one-quarter million tons—while all this coal, and more, could have been furnished by Szechuan if only transportation facilities had been available so that the vast coal deposits of that province could have been developed and worked and the coal shipped to the other provinces in urgent need of it.

Taking into consideration all these conditions, the Han River Line is beyond the shadow of a doubt one of the most important railways proposed for this country.



City of Yungchow on the Yangtze

From the standpoint of the financiers, the construction of this line would involve the expenditure of a large sum of money, but the density and wealth of the population and the great resources of the country to be served would seem amply to justify this expenditure and would warrant the opinion that the line would pay. Furthermore, this line would have practically no competition, a feature which would tend to larger revenues.

Properly constructed and equipped and properly managed and developed it should prove a sound, lucrative investment, profitable alike to the Chinese Government and to the financiers.

Democratic Dollar Diplomacy

By George Bronson Rea

FOR the first time in New York's financial history subscriptions have been invited to a Chinese Government loan by public advertisement. From the many interviews published with interested parties, it would appear that the loan issue is the opening shot in a new campaign to test the strength of American friendship for China. The present loan, however, seems to be a forced issue; a new loan to pay off an old one coming due at this time, and to provide for the interest. It is a refunding loan of \$5,500,000 issued by the Continental and Commercial Bank of Chicago to take up the original treasury notes of \$5,000,000 issued two years ago, which China, in her present state of financial chaos, is unable to meet.

Naturally, all sorts of absurd stories are being circulated in the newspapers connecting this transaction with the proposed new Consortium, which, it is said, has given permission to float this loan to meet China's pressing requirements, pending the time when it will take over all future transactions. This little flurry in the financial market has also brought with it references to other and greater requirements for China and provided the opportunity for the new Financial Adviser to the Chinese Government to declare that at least \$200,000,000 will be needed to disband the Chinese army and reorganize the government.

When ex-Minister Reinsch arrived in this country a few weeks ago, the information preceded him that he had been officially gazetted by the Peking Government as Special Counsellor to China to reside in Washington, at a salary of \$20,000 a year. Newspaper reports state, however, that he is here as the Financial Adviser to the Chinese Government, to carry on the negotiations for new loans. This makes two Financial Advisers to China credited to the United States. Professor Jeremiah Jenks has held a similar position for some years.

The announcement of Dr. Reinsch's appointment is viewed with considerable interest by high Republican leaders who are carefully scrutinizing the activities of the Administration in the Far East, during the past four years. Well informed statesmen profess to see in these activities a recrudescence of Dollar Diplomacy in its most obnoxious form and a tendency to create fat jobs for "Deserving Democrats." It is pointed out that the precedent created by ex-Minister Reinsch is subversive of the highest ethics of international diplomacy, and if other American diplomats should enter the service of the governments they are accredited to, in order to advance their interests at Washington, the United States may as well hand over its foreign policy to other nations and retire from business.

It is also pointed out that if the retiring Japanese Minister to Mexico should accept the post of special counsellor to the Mexican Government in Tokio, in order to agitate against the United States or interest Japanese capital to subscribe to Mexican loans, public opinion in this country would consider it as a piece of intolerable impertinence. In the opinion of those best qualified to judge, the retiring American Minister to Peking has created a precedent that may, in the future, cause considerable embarrassment to this country, especially in the event of any serious crisis in our relations with Japan. This uneasiness arises from the uncontradicted reports surrounding the forced resignation of Viscount Ishii, the last Japanese Ambassador to Washington,

When, early in the year, the Japanese Government proposed the name of Mr. Sakatani, one of Japan's foremost financiers, for the post of Financial Adviser to China, Viscount Ishii was instructed to sound the American Government on his appointment, and to obtain, if possible, its approval. It is said that Secretary Lansing advised Viscount Ishii that he had no objection to the selection, and the latter thereupon so informed his Government, and the appointment was announced. This was followed by the immediate objection of the American Minister at Peking, who advised Washington that its acquiescence in the appointment of a Japanese to this important post, would be interpreted as another acknowledgement of Japan's predominant position in China. Viscount Ishii was placed in the embarrassing position of having misinformed his Government, and, when he failed to get from Secretary Lansing an admission that he was authorized to send to his government the assurance that there was no objection to Mr. Sakatani's appointment, there was nothing left for him to do, under the circumstances, but resign.

When, some months later, Minister Reinsch accepts the post of Financial or General Adviser to the Chinese Government to reside in the United States, the incident gives rise to the legitimate suspicion that his opposition to Mr. Sakatani was based, not so much on any altruistic regard for China's interest, as to further his own personal ambitions. This suspicion is heightened by the fact that when Minister Reinsch opposed the appointment of Mr. Sakatani he was actively engaged in forcing upon the Chinese the idea of a new Consortium, which, from all appearances, was devised by himself in opposition to the principles laid down by President Wilson in 1913.

It is also recalled that Viscount Ishii was the second representative of a great foreign Power who lost his post by reason of Minister Reinsch's activities. In the spring of 1917, two weeks after we had entered the war, M. Conti, the French Minister at Peking, protested against the railway contract in the province of Kwangsi held by an American corporation, basing his action on a secret agreement entered into with the Chinese Government in September, 1914, which gave French capital a monopoly of railway construction in that province. Minister Reinsch, without stating the full case, severely criticized the French Minister's move as a violation of the Open Door principle. This communication was sent by the Secretary of State to the French Foreign Office without comment, and to avoid a controversy with the United States at the moment of our entering the war, Minister Ribot simply transferred M. Conti to Copenhagen. Everybody connected with French enterprise in China were deeply resentful of this treatment of an old and tried official, who, they declared, was simply performing his duty in safeguarding French interests.

It is also recalled that during the presidential campaign of 1916, when it looked as though the Democratic party would be defeated, stories were freely published in the Chinese press, that, in the event of a Republican victory, Minister Reinsch would resign to accept the post of General Adviser to the Chinese Government. The story has since been emphasized by the declaration of one of the highest officials attached to ex-President Li Yuan-hung, that the American Minister at Peking wrote a personal letter to President Li at that time, soliciting the position.

The whole Chinese situation has been seriously complicated by the inexplicable conflict of ideals and policies as revealed by the attitude of the State Department and the activities of our Minister to Peking. Time and again during the past four years, the administration has laid down wise policies for the guidance of our Far Eastern affairs, and each time this policy has been ignored or flouted. It has been difficult for Republican leaders to reconcile the high principles announced from time to time by the President or the Secretary of State, and the actual policy pursued on the ground. There is every evidence that there was one policy in Washington and another in Peking, a case of the tail wagging the dog, without the dog knowing it was being wagged.

It is recalled that President Wilson withdrew official support to the American Group in 1913 in the matter of the Reorganization Loan, because he considered our participation at that time as highly inimical to the sovereign rights of China and subversive of basic American principles. There never has been any public disavowal of these ideals, yet the administration is now fathering the organization of a new and more powerful financial consortium, in direct violation of the principles so widely advertised in 1913. Friends of the President who realize how tenaciously he clings to these basic principles of right and justice, are convinced that he has never been consulted in the matter of the new consortium, for, if he had, he would have the courage to make public the reasons for his surrender of former principles. That no announcement has come from the White House in explanation of this reversal of policy, gives rise to the belief, that the President has not been consulted.

It is generally conceded that the President was right in 1913, for although his stand against the American Group operated against the profitable investment of American

capital in China, he was fully justified from the viewpoint of those higher ideals which lie at the foundation of our institutions. The first Reorganization Loan to the so-called republican government of Yuan Shih-kai, was the direct cause of the failure of democratic or representative government in that country. It fastened upon China the rule of the military bandits who have since sucked her life blood dry. The funds have built up a huge military autocracy, throttled the nascent germ of Democracy, and sent into political exile those brilliant republican leaders who overthrew the worm-eaten Manchu dynasty.

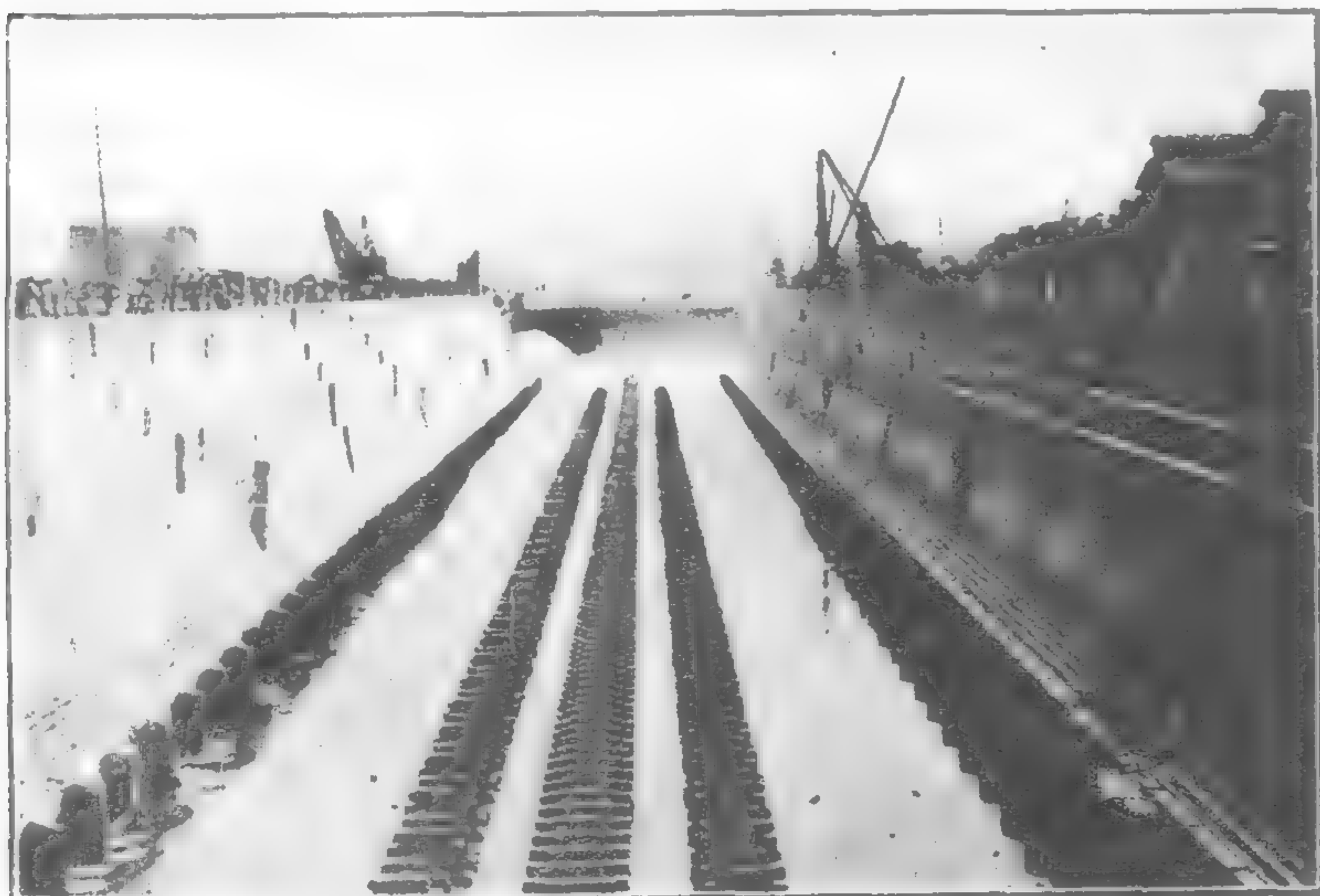
For the sole benefit of international finance to obtain loan, railway and industrial contracts from a centralized power, without having to experience the delays arising from a parliamentary government, the fiction of a Chinese Republic led by unscrupulous military satraps, has been upheld by the Powers for the past seven years. Many of the deals entered into with this group of grafters will never stand the scrutiny of an honest parliament. An honest Chinese government sounds the death knell to the execution of these schemes. Therefore, the corrupt, incompetent old gang must be maintained in power.

After seven years of misrule, graft, sedition, tyranny and internecine strife, it is now proposed that the great American Democracy shall, through its savings, cement the hold of the military bandits upon a long suffering people, and destroy for another generation the success of representative government. For this is what the proposed new Loans to China mean at this time. No wonder, President Wilson has refrained from making public the reasons for his reversal of principles, and that not a word has escaped from the administration before the spectacle of the ex-American Minister arriving in this country as the salaried agent of the Peking

(Continued on page 14)

Pearl Harbor to be a First Class Base

The recommendations made by the United States Special Naval Board, headed by Admiral J. Mekean, for the development of the Pacific Coast Naval Shore establishment during



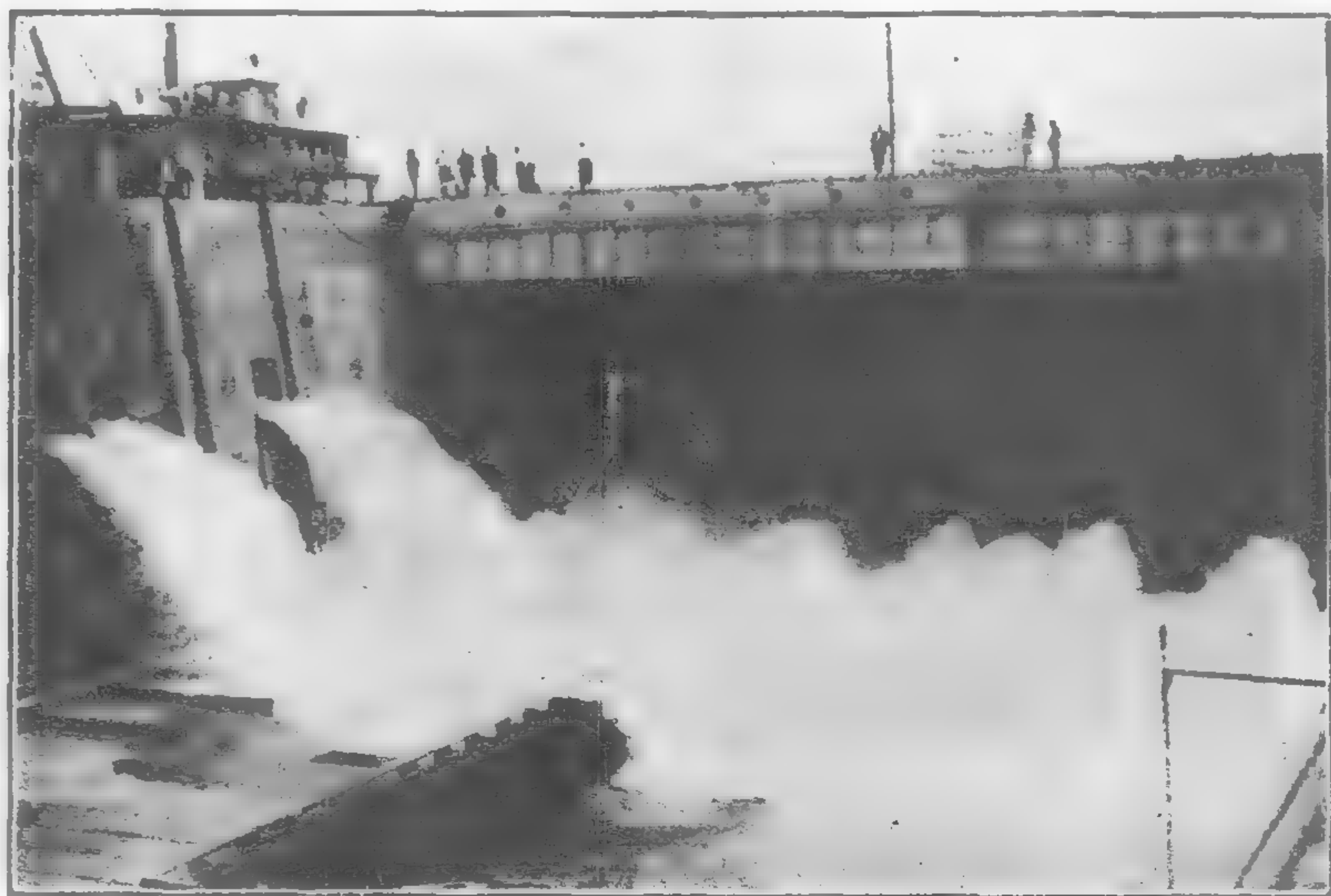
The 1,000-ft. dock at Pearl Harbor.

the next five years at a cost of Gold \$158,000,000 will prove of world-wide interest, while the projected development of Pearl Harbor and Guam into first-class naval bases and the Philippines to a second-class base will certainly arouse speculation in the Far East.

The Board points out that the strategic position of the Hawaiian Islands makes it absolutely imperative that Pearl

Harbor be converted into a first-class base adequate to take care of the whole fleet in any movement offensive or defensive, across the Pacific. The developments of Pearl Harbor are, according to a telegram published in the East, estimated to cost \$27,000,000, including an additional dry dock, increase of storage space, expansion of repair and maintenance equipment and a complete submarine base.

The present naval dock at Pearl Harbor is 1,000-ft. in length and was built by the Hawaiian Dredging Co. It was dedicated to use by Secretary of the Navy Daniels in August, 1919, the Secretary visiting the islands on the superdreadnought *New York*.



Filling the big dock at Pearl Harbor.

DEMOCRATIC DOLLAR DIPLOMACY—*contd. from page 13*

militarists to assist in raising the great loan of \$200,000,000 to perpetrate this crime against liberal or parliamentary government.

It is difficult for honest Americans, and especially the Republican leaders who were scathingly denounced by the Democrats for their so-called Dollar Diplomacy, to understand the reasons for this alliance between the Democratic administration and international finance, especially when the initiative comes, not from American bankers, but from the State Department acting upon the advice of the American Minister to China. Under previous administrations a certain amount of governmental support and encouragement was extended to our capital for legitimate investment in foreign countries, but open encouragement was never given to any financial combination whose loans might be employed to throttle the growth of Republican ideals in other lands.

President Wilson was quick to see the menace to the administrative independence of China in 1913, and thereby gained the gratitude and confidence of the Southern leaders, who willingly sacrificed their opportunity to place themselves in the most powerful financial position in China, in order to advance their ideals. The radical departure of the adminis-

tration in forcing the organization of a new consortium may benefit American bankers for a year or so, but it is hardly possible that this new trend of Dollar Diplomacy will meet with the sanction of a Republican President.

New York, Nov. 7, 1919.

An association of Chinese and American Engineers was recently formed at Peking, Mr. K. Y. Kwang being elected President; Mr. Murray Sullivan, Vice-President; Mr. Yang, Secretary, and Mr. Thomas Sze, Technical Expert in the Ministry of Communications, Treasurer. At the inaugural meeting over forty engineers signed the constitution. Numerous Chinese educated in engineering in America now hold important positions in China, and there are many American engineers in the country. Mr. Kwang, the President of the new society, constructed the railway from Kalgan to Fengchen as Chief Engineer, and later became Engineer-in-chief of the Northern section of the Tientsin-Pukow Railway. Mr. Kwang is one of the most thorough engineers in China. Mr. "Strong" Yen, the Managing-Director of the Canton-Hankow railway, is another Chinese engineer with a fine record and experience, while Mr. T. C. Sun, Managing Director of the Projected Chuchow-Chinchow railway, is of like calibre and was responsible for the building of the Kirin line. There are many other Chinese engineers who are a credit to the profession and certain to make names in the future development of China.

New Concrete Post Office Building at Nanking

The new Post Office building now being constructed at Siakwan, Nanking, adjoining the police station, is being carried out in reinforced concrete, and is, in design, a modern treatment of the Ionic order. It is of three floors and is surmounted by a dome. The frontage on the main street, or "Maloo," as it is called, approximates 140 feet.

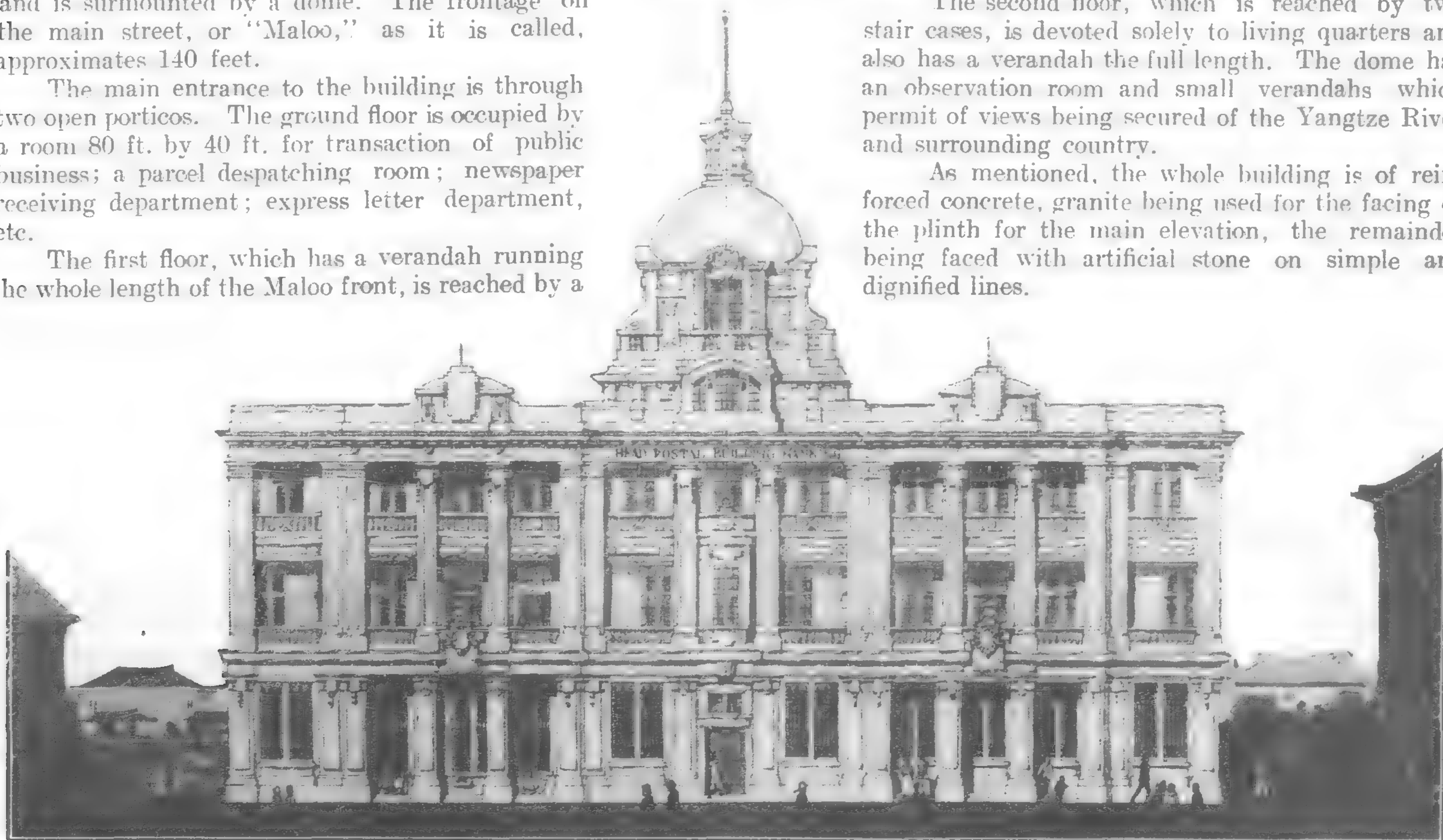
The main entrance to the building is through two open porticos. The ground floor is occupied by a room 80 ft. by 40 ft. for transaction of public business; a parcel despatching room; newspaper receiving department; express letter department, etc.

The first floor, which has a verandah running the whole length of the Maloo front, is reached by a

missioner, which open on to the verandah, and offices for the clerical staff. In the rear are situated the offices for general accounts, district accounts, inland control, inspectors' department, examination room, and printing supervisor.

The second floor, which is reached by two stair cases, is devoted solely to living quarters and also has a verandah the full length. The dome has an observation room and small verandahs which permit of views being secured of the Yangtze River and surrounding country.

As mentioned, the whole building is of reinforced concrete, granite being used for the facing of the plinth for the main elevation, the remainder being faced with artificial stone on simple and dignified lines.



FRONT ELEVATION OF THE NEW POSTAL BUILDING AT NANKING

main staircase leading to a large hall, while a small staircase gives access to the subsidiary offices. The main offices are those for the Postal Commissioner and the Deputy Postal Com-

The building is warmed by a central heating plant, and is equipped with electric light. The architects are Messrs. Palmer and Turner, of Shanghai.

Big Port Project for North China

Involves the Creation of an Ice Free Port and City, with Dock, Railway and Canal Services to Develop Chihli Province and North China

ONE of the most important projects in connection with the development of deep-sea ports in China was launched in December when the Chihli Provincial Assembly gave its approval to a scheme known as "The Chihli Development Plan" matured by the Chinese gentry of Chihli for the construction of a modern port on the Gulf of Pechihli, about twelve miles from Chuichinghokou, an old port not far south-east of Tangshan, on the Peking-Mukden railway. The project involves as preliminaries

The building of a modern port and the necessary facilities;

The construction of a railway from the port to some point on the Peking-Mukden railway to give access to Tientsin; and

The excavation of a canal viâ Tangshan to Tientsin.

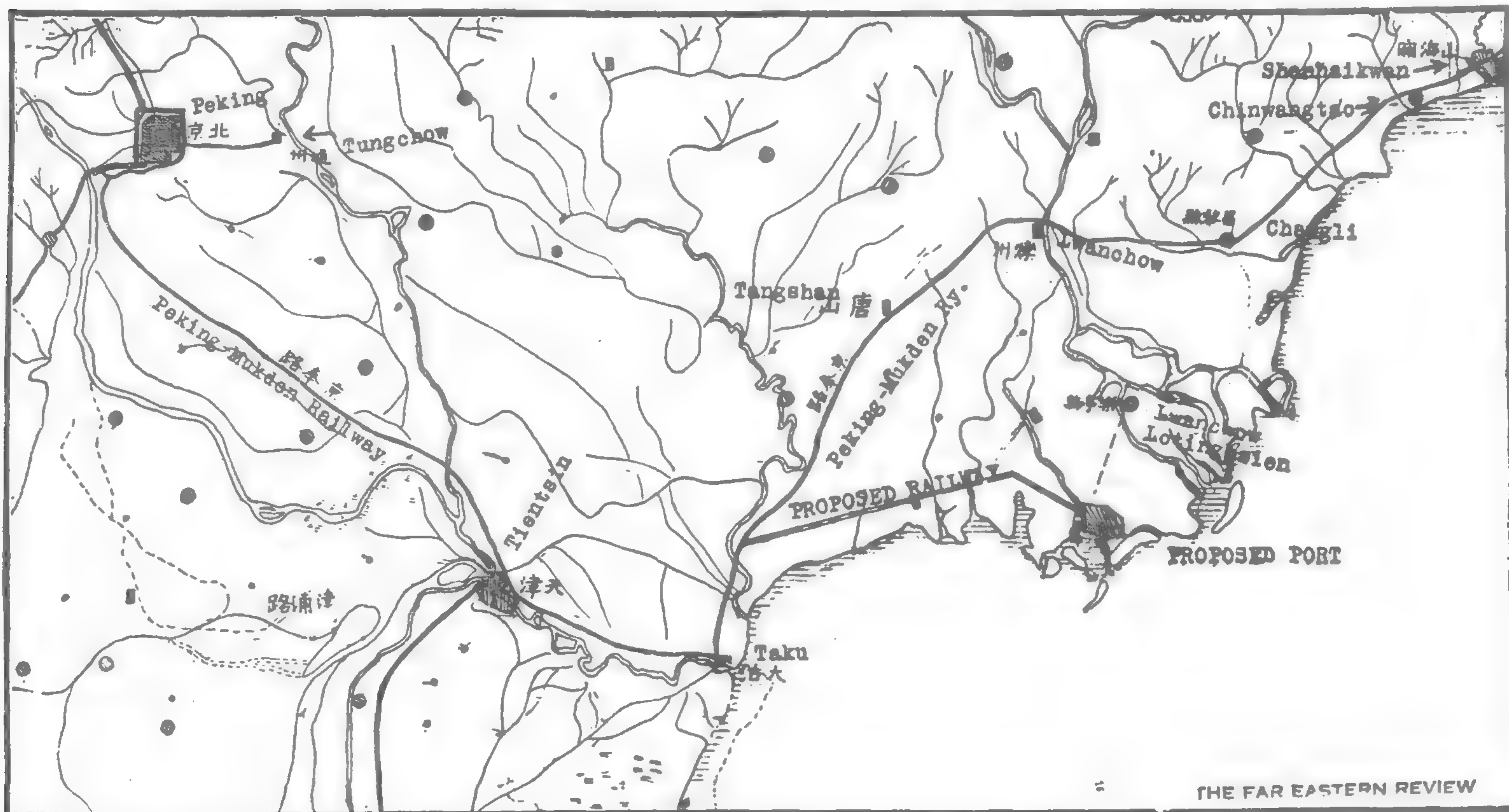
The port selected by the Chinese promoters of the scheme is that which was named by Dr. Sun Yat-sen in his program for the International Development of China, which was published in the FAR EASTERN REVIEW of June, 1919. In that scheme Dr. Sun emphasized the necessity for the construction of a deep water and ice free harbor as a "Great

Northern Port," and while he has not taken any active part in developing the present project he expressed to the FAR EASTERN REVIEW great appreciation of the action of the Chihli gentry in so promptly and energetically following up his suggestions for the betterment of their province and the relief of Tientsin.

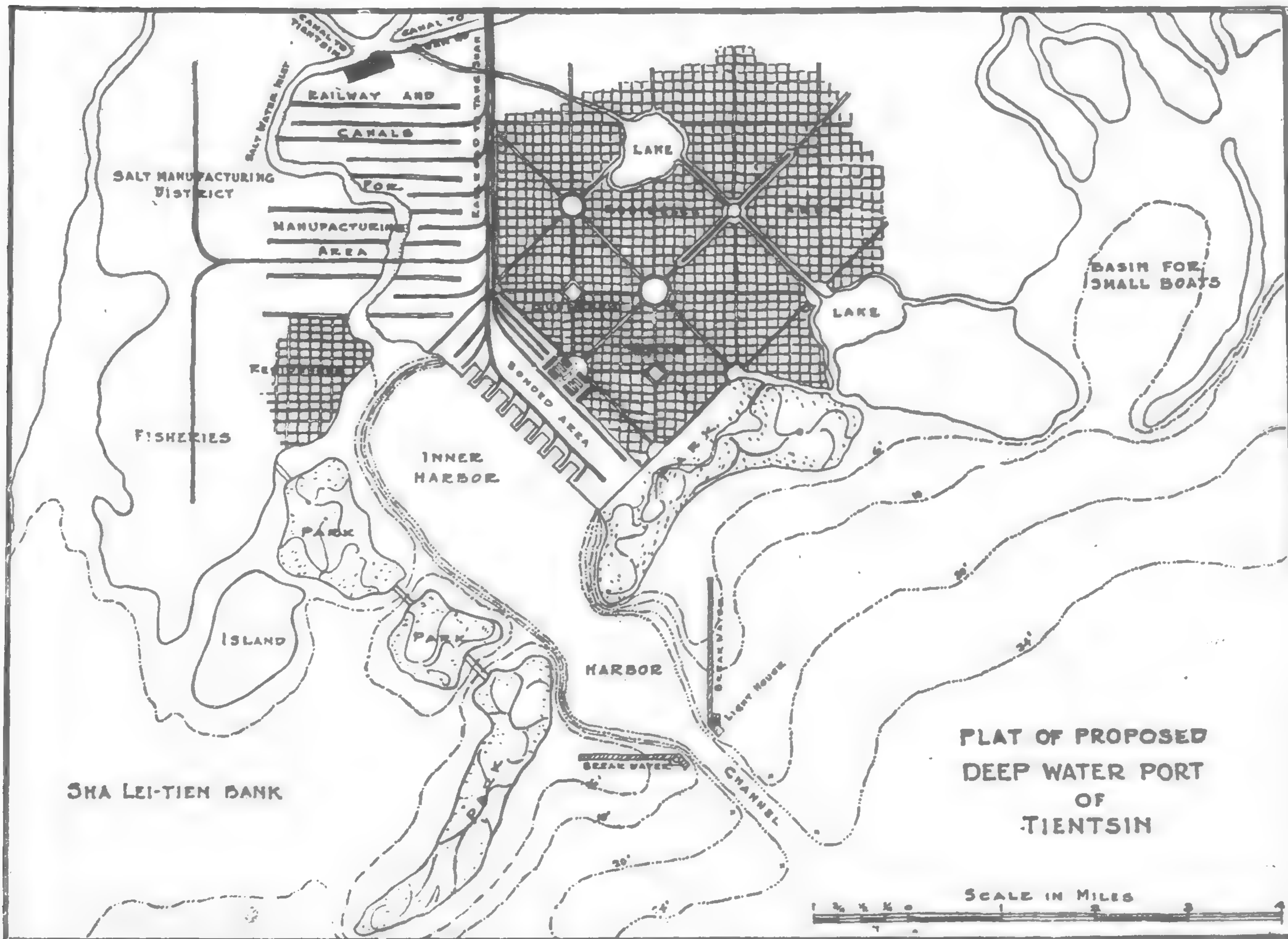
The gentry of Chihli who are behind the project are inspired by the necessity which exists to provide a new deep water port for Tientsin. The disabilities from which Tientsin suffers by its situation a long way up a narrow winding river—which is frozen in winter and consequently out of commission throughout the winter months unless expensive ice-breaking is constantly carried on—completely retard the development of Chihli Province and the entire north of China. It is believed by the gentry that with adequate up-to-date facilities for the handling of vessels and cargo, a port situated on deep, ice free water, in close proximity to cheap and abundant fuel, with good communication with the interior, will in very short time become a big industrial as well as commercial centre as well as fill a need which the whole north of China is gasping for. At present Tientsin is accessible only to light draft vessels. Deep sea steamers have to



An Aeroplane View of the Projected Deep Water Port for Tientsin



Map showing the position of the Projected Port and its relation to Tientsin.



anchor miles out from the shore and in bad weather the handling of cargo is impossible. In addition the floods which isolated Tientsin a few years ago, the silt which is a constant trial and tribulation to those endeavoring to keep the port open, contribute to make a port capable of handling deep sea vessels a necessity for the preservation of Tientsin as a market. The vested interests of Tientsin are too great to be sacrificed, and the promoters of the new port project feel that their proposal if carried out will solve Tientsin's difficulties and open the way for the proper development of the whole of North China, which development will be assisted in the future both by Chinwangtao and Hulutao, when the latter port is completed.

The site selected for the new port is roughly indicated on the sketches reproduced herewith. The inlet is sheltered on two sides by a peninsula and by three small islands, and it is claimed that an excellent all the year around harbor can be constructed by building a breakwater in such a fashion as to let the prevailing winter winds blow out the ice that may form within.

According to the present plans extensive docking and landing facilities are to be provided for the new port, which will also be well equipped with godowns, coal-sheds and all other buildings required for a large shipping centre.

A concession of 100 square miles will be set aside for the port, and within it, in addition to the above, there will be constructed a summer resort, factories and mills.

As these industrial plans develop it is expected that the new port will grow into one of the large cities of Chihli Province.

The railway to connect the port with the rest of the province enjoying railway communication may, of course, run up to Tangshan. Later on it may be extended in two directions, one line tapping the rich mining, agricultural and cattle-growing district to the north of Tangshan and the other connecting Tangshan with Tungchow, thirteen miles to the East of Peking. Of the two lines the former is thought to be the more important in that it traverses what is practically a virgin territory—as far as the development of industry is concerned—and will make it possible for the grain, skins and hides of Chihli Province to find a short and easy route to the sea. The mining possibilities of Tangshan and adjoining districts are also very considerable.

The projected canal will run from the new port via Tangshan to Tientsin, where it will connect with the Grand Canal and thus open up another water route from some of North China's richest territory to the sea.

The estimated cost of the Chihli Development Plan involves an expenditure of from \$37,000,000 to \$40,000,000, and the funds that are to be advanced for it are to be secured against Chihli Provincial Treasury Bonds. In well informed circles it is not, however, thought that the present estimate will come anywhere near to covering the cost of a big port, two railways of considerable length and a canal from Chuichinghokou to Tientsin.

Among the Chinese who are interested in the scheme for the development of Chihli Province are Chow Tze-chi; Pien, Chairman of the Chihli Provincial Assembly; Tuchun Li Hsun and his confidential representative Wen Shih-tsen; Tuchun Tsao Kun and his brother. Civil Governor Tsao Jui; Mr. Hsu, of the Tientsin-Pukow Railway and a brother of President Hsu Shih-ch'ang; and many others. On the foreign side is Mr. Harry Hussey, an architect who was closely connected with the architectural and construction work at Peking of the Rockefeller Foundation and who is representing the foreign interests.

Regulations in connection with the project are being drawn up and will be submitted to the Ministry of Commerce, Agriculture and Industry at Peking for approval and registration.

It is expected that the agreement of the Government will be secured, especially as the project has already been passed by the Chihli Provincial Assembly.

Chinese Post Office at Hankow

This building was erected for the Chinese Postal Administration in thirteen months by a local Contractor, Chee Mei Kee, at a cost of Tls. 75,000, and was opened on Chinese new year day 1917. With exception of a few materials the Chinese market cannot supply, it will stand as a feature of Chinese labor and industry, the furnitures throughout, which are of oak, have been made also locally. It is one block from The



District Post Office, Hankow

Bund in the British Concession, on the corner of two roads from which four entrances lead to the Public Hall with a 170ft. long counter in mosaic work. At the back thereof are grouped the various offices of the Mail and Parcel department, round a big yard, which, by a covered thoroughfare, is connected with the road. The District and Administration Offices are all on first floor. The high plinth is of granite, the upper walls in brick with concrete and granite plaster facing.

The enormous possibilities for the profitable development of hydro-electricity in China and the unquestioned future of electrical railways in the mountainous provinces, makes the remarks of Mr. August Karisen in an article on the electrification of the railway from Cape Town to Cairo, of peculiar interest. In discussing the possible competition of the aeroplane Mr. Karisen says: By Edmonton, Klondyke and the Behring Straits the distance from Chicago to Peking will be 8,000 miles, accomplished in seven days. The distance Peking-London through the Gobi Desert to Irkutsk will be 6,100 miles, in five days, and the whole circumference of the northern hemisphere of the earth of 18,300 miles will be made in 17 days, or less than the pre-war time from Johannesburg to London. The electric railway allows a safe speed of 50 miles per hour, even in the heavy gradients, and it is this electrification which makes rapid railway transit possible, provided, of course, that rails and bridges are made for the heavy locomotives required. We shall thus beat the aeroplane, because with passengers the aeroplane cannot travel by night.

Chihli's First Industrial Exposition

By Upton Close

ONE of the most progressive measures ever taken in the encouragement of industries, ancient and modern, imported and native, in the northern part of China, was the carrying out of the Chihli Industrial Exposition by Commissioner of Industries Yen Chih-I under the auspices of Tsao Jui,



Rug-Weaving

It takes about 150 days of labor to turn out a 9 by 12 rug. The foreign demand for Tientsin rugs was never so great, and the price was never so high as this winter.

Civil Governor of Chihli Province. The Exposition closed its twenty-day session, which was cumulatively successful, on November 15. Commissioner Yen, who is one of new China's livest wires in the founding of manufactures and development of natural resources, has had the idea up his sleeve ever since his return from the Panama-Pacific Exposition in San Francisco, 1914-15, which he attended as one of the delegates in charge of China's exhibit. Two years ago he became Commissioner of Industries of Chihli Province, and grasped this opportunity to work up his idea of a competitive exhibition of the best products of the entire province, which he believes to be one of the most effective stimulants of progress among producers.

Funds for the project, however, as in the case of most progressive schemes, were difficult to obtain. Failing to secure an appropriation for the purpose, Mr. Yen set to work to save the money necessary from the regular budgets of the provincial Agricultural Experiment Station, the Agricultural School, the Industrial Experiment Station and the Industrial Exhibit Museum, of which four institutions he is, by reason of his office, the head. Last summer, having got together \$2,000 he enlisted the support of the Chambers of Commerce, the magistrates of the various counties, and his own assistants in the various Industrial Institutions—who donated the necessary clerical and ushering work—and planned for his opening. On the advice of foreign friends, who assured him that many foreigners would take advantage of the Exposition if it were held after their return from the summer resorts, the date of opening was postponed to October 20.

Two Thousand Entries

Two-thousand entries were gathered, and set up in the two main wings of the Industries Museum building in the

Tientsin public park. These entries were of three varieties: Those purchased by each county magistrate at the request of the Commissioner as being most representative of the industries of his local district or bearing some special interest, those donated by manufacturers, and those placed by producers for sale by the Exposition. The former two varieties are to be turned over to the Museum, which contains a permanent exhibition of fisheries, agricultural, outside province and foreign products, for permanent exhibition. The latter, comprising over 900 entries, were tagged and numbered, and sold to visitors on condition of delivery at the close of the Exposition, with no discount charged or profit deducted. The success of the Exposition in disposing of the majority of its sale entries has made it immensely popular with merchants and manufacturers, and this class of entries is certain to be greatly increased in future showings. Through the courtesy of the customs authorities, exhibits from the various districts were allowed to come into Tientsin free of native customs duties.

The object of the Exposition was announced to be: "To advertise the manufactures, hand-industries and art work of every district, and create a competition in excellence of output and progressiveness of methods." A quantity of literature, well got up, was distributed through the native Chambers of Commerce of the province. In the opening speech, following a brief introduction by Governor Tsao Jui, Commissioner Yen emphasized the importance of bringing in improved methods and increasing the standard of the handicraft of China. In America and Europe machine manufacturing occupies the first importance, as labor is scarce and dear, but in China hand-labor will continue to be of the primary importance for many decades. Aside from the fact of the abundance of labor, exists the difficulty of procuring Western-made machinery, the almost entire output of which is likely to be absorbed in post-war reconstruction for a considerable period of time. China is unable to manufacture her own machinery except to a very limited degree, and Japanese machinery-manufacture is still in its infancy. Much experience and study will be required to learn machinery-manufacture in a way which will enable successful competition with other countries; and it will be necessary to introduce this revolutionizing factor in industry gradually, in order to avoid the economic and social disturbances which attended its inception in England and other countries.

Machinery Manufacture and Handicraft

Although machinery-manufacture is to be encouraged in every way as the ultimate goal to work toward, these considerations point to the necessity of stimulating and standardizing handicraft. Some products, as the Tientsin rugs, which took first prize in the Panama-Pacific Exposition, rank among the world's best craftsmanship, while many other products are extremely crude and undeveloped. It is these crafts in which Chihli province cannot be said to compare with foreign countries, or even with South China, which it was especially desired to stimulate.

The Commissioner further set forth the importance of industrial education in improving the condition of the people. It is his aim, he said, to see industrial education a part of the curriculum of every intermediate and middle school. The Exposition, he trusted, would spur to action by competition and the exchange of improved methods and ideas.

Mr. John Wang, founder of Hwa Pei Tannery, followed with a speech explaining the place of Expositions in accomplishing progress, and told what the great industrial expositions in Europe and America had done for industry there.

Actual Process Exhibits

The exhibits were arranged in five departments: (1) The actual making of goods, in a room to itself; (2) Exhibits of manufactured products; (3) Tableaux displays; (4) Miscellaneous entries; and (5) Sale exhibits. The first, where



The Old Inventor and His Rope-making Machine

After eighteen years of labor he perfected this machine for twisting rope, which will do the work of eight men, and brought it to the Exposition to give his invention to the world.

work—"men"—who were over half women—were engaged in the actual process of their various crafts which had been transplanted bodily from their shops to the Exposition, naturally attracted the most interest. Thirteen various crafts and arts were in progress: Saddlery and shoemaking, brush-making, straw-braid hat manufacture, hosiery-knitting, thread-spinning from cotton, wool and camel hair, towel-knitting, hemp-rope making, rug-making, willow-withe basket work and grass-mat weaving, cloth-weaving, silk-making, and stone sculpture. New methods were demonstrated and ideas interchanged.

A Chinese Inventor

One sturdy old man from the interior was demonstrating a rope-making machine on which he has spent eighteen years labor, and which he claimed could put out as much rope as eight men working by hand. The old chap was confident that he had the very latest thing in rope-weaving that the world has seen. Although his invention will hardly compete with the modern rope-making machines of the West, it is most encouraging that Chinese of the remote interior, who know nothing of modern machinery, should realize the necessity of and feel the impetus to improvement of their ancient methods and implements.

Hair-brush making is an industry new to China, and really owes its existence to the boycott of Japanese goods. Thousands of tons of hog bristles go out annually from Shantung, Chihli and Manchuria to Japan, America and Europe. A large part of Japan's finished product was shipped back to China for sale. Since the boycott, the preparation of the bristles and brush-making has been undertaken in Chefoo, Tientsin, and other places. Rug-making, Tientsin's most famous industry, was well represented. It is estimated that half a million dollars' worth of Tientsin rugs are put out

yearly in this one city alone, a large portion of which are exported. Tientsin rugs, although the most important in output, are not, however, the finest in art and texture. The Exhibition contained several Mongolian rugs which set a good model for Chihli and Shantung rug-makers to work to. These Mongolian rugs, however, can hardly be called a commercial product, as they are gradually woven by a family, sometimes requiring several generations of time for completion.

A New Sculpture

One most interesting exhibit was the stone-sculpture, which represents an endeavor to introduce a new school of sculpture into China on a commercial basis. A soft, snow-white marble-like stone is quarried in Chuyanghsien, Chihli, and worked up in the studio in the Italian Concession, Tientsin. Portrait sculptures, imaginative pieces, and groups are executed, many copies of ancient Greek models being attempted. A distinct effort is made to get away from the old Chinese caricatural style, and follow the Western realistic style. The detail and workmanship are good, but the pieces, as might be expected, lack life. That it is popular, is shown by ex-President Li Yuan-hung's purchase of a large group at the Exposition.

The Agricultural, Fisheries and Industrial exhibits which are constantly in the building were thrown in with the Exposition, making a good sized show. The Exposition proper contained finished products manufactured in Chihli province only. Every exhibit was distinctly labeled with the county of its origin, the name of the concern which produced it, and the price of duplicate articles (if it was a sales exhibit).

Tableaux Displays

The tableaux displays were artistically got up. The wool industry was graphically illustrated by a large, mounted fat-tail ram, surrounded by samples of wool in various stages of manufacture, up to the finished products of the knitting mills. Several furniture and home-decorative exhibits were shown in attractively arranged rooms, complete from the rugs on the floor to the paintings on the wall and the incandescent lamps, all of which were local products. Foreign visitors were particularly pleased with a tasty bed-room display, while an office room and a full-room set of wicker-work were almost equally good.

A beautiful exhibit was that of aigret plumes, produced and prepared beyond the Great Wall. The lace-work, needlework and embroidery contained some specimens which were most tempting to the pocket-book. The porcelain, although inferior to Kiangsi products, was very acceptable and very cheap. Some of the figures cast in clay, and the pottery groups were large, and must have been very difficult to burn.

Various Exhibits

A full line of athletic goods and school equipment, from chalk crayons to the big bass drum, were shown. An exhibit put up by a Tientsin hat-manufacturing firm, showed the caps worn by ranking officers from the humble lieutenant to the magnificent plume-crested head-gear of the president of the Republic. The articles of this exhibit were tritely marked, "Not for sale." Food products were represented by native bottled wines, dessicated egg powder, tinned biscuits, and dried native figs and persimmons.

The Tientsin Crucible and Steel Co. showed examples of the various qualities of its output, while cutlery, swords, steel, brass, pewter, and silverware occupied a large section. Excellently made granite-ware and nickel-plated plumbing-fittings were shown, and the Tangshan cement industry occupied a large place with its ornamental tile. Native-made

machinery, of course, was the weak point, being represented solely by two small cotton-gins.

The Exposition was open daily from 9 a.m. to 5 p.m. A bevy of ushers were in attendance, who personally conducted every guest over a fixed route through the entire ex-



Chinese Method of Weaving Cloth

hibit. Foreign guests were conducted by English-speaking ushers. Two circles in the centre of the building were set off for rest and tea rooms for visitors. The number of tickets sold reached as high as six-hundred daily. Among the prominent guests were the governor and two ex-presidents, all of whom made purchases.

An Opportunity for the Foreign Trader

Commissioner Yen's enterprise will doubtless prove of great value in building up native industries, and its success has given rise to plans to conduct it yearly. Although for its first year the Exposition was limited to products of Chihli province, it is hoped that it will develop into an exhibit of and competitive stimulant for the industries of all Northern China. The management would be glad, if warranted by the circumstances, to provide for the display of European and American imports and machinery. If local representatives of European and American manufacturers were to obtain the use of an annex for this purpose, they would attract the interest to their various lines of the thousands of visitors to the Exposition, many of whom are merchants and producers in search of improved products and particularly of machinery and methods which will aid them in improving their own products.

A Return to Pure Americanism

Senator Miles Poindexter smashed all precedents by announcing his candidacy for the Republican nomination for the Presidency in 1920, and laying down the principles of his own platform. After eight years of wobbling, side-stepping and ducking every issue that has arisen, it is a relief to read the statement of the stalwart Senator from Washington especially that part concerning America's international relations. His position is of great interest to Americans in the Far East, more so, as his ideas are in complete harmony with those of other Republican presidential

aspirants, who see in the manhandling of America's Oriental diplomacy the menace of future trouble.

The process of making a "supreme sacrifice" of America, and "of joining our fortunes with the fortunes of men everywhere" should be stopped. The opposite and ancient policy of our fathers must be restored—of saving instead of sacrificing our great institutions, and of promoting in every honorable way the interests of our people. The process of internationalizing our fortunes must be reversed, and the separate interests of this nation, with due regard for the rights of others, must be cherished again."

"Every American soldier, except those engaged in diplomatic or other peaceful service, should be at once withdrawn from Europe and the continent of Asia; and the work of recruiting and transporting military forces of the United States for service in Siberia and Germany and the plans being made for sending an American army to Turkey should be at once suppressed."

"The proposal which has been recently presented to the American people that the United States should become a trustee for the world, should be denounced as destructive of liberty and ruinous to the American people, as well as injurious to the peace and safety of the world."

"The recent assumption by certain officials of our government of jurisdiction of the settlement of foreign controversies, which are of but remote concern to us, has engendered racial animosities against the United States. We should cease officious meddling with other people's affairs."

In this clear cut declaration is presaged the withdrawal of American official support to any international scheme for the financing of China, a scheme that can only invite the most serious consequences in 1923 when the question of the extension of the Liaotung lease comes up for adjustment. It also sounds the note of warning against further diplomatic intervention into the affairs of China, Japan and Russia.

Although the Convention has voted for Major-General Leonard Wood, the principles so clearly and fearlessly laid down by Senator Poindexter, will undoubtedly be incorporated into the official platform for the presidential campaign.

G. B. R.

Native Labor in Shanghai

The Chairman of the Ewo Cotton Spinning and Weaving Company, of Shanghai, Mr. A. Brooke Smith, had the following interesting remarks to make about native labor in Shanghai. Wages are rising, unquestionably, but so will the purchasing power of the people, which is what is wanted after all. Mr. Brooke Smith says:

"Native labor is a factor that is causing considerable difficulty and I am afraid must give us much anxiety in the future. Until recently, this has been plentiful, but owing to the rapid growth of Shanghai as an industrial centre, which of course brings in its train the housing problem, there can be no doubt that, with the new cotton mills and other industries, building and projected, we may expect still greater trouble in finding sufficient native labor to keep our mills fully supplied. The welfare of our workers has always been one of the proudest traditions of my firm, and I may say that we are prepared to face this problem in a generous spirit. When we found that the higher cost of living necessitated a reconsideration of our native wages lists, we advanced them all round about 12 to 15 per cent. last spring, and since then additional grants have been made where necessary and also in recognition of good work. We have further made substantial contributions towards the upkeep of the Yangtszepoo Social Centre as a night school and elementary technical school for our native staff and also towards the establishment of a hospital, under the same auspices, adjacent to our mills."

Japan's Metropolitan Electric Railways

IT was as far back as 1889 that the idea of building an overhead line through the city of Tokyo, to serve as the direct chord between the two metropolitan termini—Shimbashi and Ueno—was conceived as part of the street improvement plan of Tokyo. The idea became one of practical importance when the steady growth of traffic on the lines serving the metropolis, particularly the Tokaido and the North-Eastern, began heavily to tax the poor capacity of the Yamate Line, which forms the sole link connecting the two foregoing lines, not to mention the fact that the two stations were found wholly inadequate to cope with the present and prospective development of traffic. The undertaking was started, and as a first step it was decided to lay a deviation from Shimbashi station (the then terminus of the Tokaido Line), and to make arrangement for the construction of a central station in the heart of Tokyo.

Towards the end of 1899 the purchase of land was taken in hand, but unfortunately the undertaking was repeatedly postponed, or even suspended, for want of funds, and it was more than a decade before the first section of the line was finished. In the interim, the electrified section of the Yamate Line, described elsewhere, was extended to Karasumori (the name of which was later changed to Shimbashi) in 1909, to Eirakucho in June, 1910, and in September to Gofukubashi, a temporary station adjacent to the projected Central station. In December, 1914 the construction of the Tokyo Central station was finished, and the station was opened for service. Simultaneously with the opening of the new line, the Shimbashi station was turned into a goods depôt and its name changed to 'Shiodome.' Moreover, the foreshore of Shinagawa, the southwestern entrance to Tokyo, was reclaimed to the extent of about 330,000 square yards, and a plan was prepared for laying out a large classification yard on the hump principle. Work is now in progress on the extension

of the station premises, which, when completed, are expected to enable the Railway Management to effect a complete revolution in the mode of marshalling.

The elevated urban line is one of quadruple track, two of which tracks are used for suburban, and the other two for through train, service. Both groups of tracks were originally designed for steam trains, but, in view of the prospective growth of traffic, the quadruple track plan was, later on, changed to the sextuple. By that time, however, the bridge work had been practically completed on the quadruple plan, and the scheme of laying two additional lines had accordingly to be deferred to a later opportunity. At present, two tracks only are electrified, the other two being reserved for the operation of steam trains. The tracks are carried on masonry and steel viaducts, concrete or brick arches spanned between masonry piers being the standard construction, with steel plate girder structures supported on steel columns for the street subways. The floor thickness was reduced to a minimum by the use of half-through girders with solid floors. The cost required for the work totalled Y.9,976,000, approximately. A further extension of the overhead line leading north to Manseibashi and Ueno stations has been made, the line carrying 6 tracks between Tokyo and Kajicho, 2 tracks between Kajicho and Manseibashi, and 4 tracks between Kajicho and Ueno.

The New Tokyo Station

The new Tokyo station forms an important feature of the improvement work which the Imperial Government Railways have been carrying out for some years. With the completion of the urban overhead lines, the new station will be made to serve as a converging point of all State lines in the metropolis. The work was started in March, 1908 and



Overhead Railway in Tokyo, Tokaido Line.

completed in December, 1914. The building forms a magnificent example of Renaissance architecture. The cost of construction of the station was approximately ¥3,800,000.

The station is situated practically in the heart of Tokyo and within easy reach of the most prosperous quarters of the city. The ground, 2,579,350 square yards in extent, lies within the outer moat of the old Yedo Castle. The tracks and platforms are laid on the elevated structures, while the main building and the marshalling yard are on the street level, access to the platforms being gained by flights of stone steps from the subways below. The track layout provides for 8 tracks, served by four platforms, two of which, 775-ft. by 40-ft., are designed for steam trains, inbound and outbound. The other two, which measure 429-ft. by 40-ft. and 429-ft. by 30-ft. respectively, are used for electric trams.

The front of the building is provided with four entrances. The southern entrance is used for outgoing passengers, the two northern entrances serve as exits for the incoming, while the central entrance is reserved for the use of the Imperial Family. The parcels and luggage received at the checking counter are brought from the subway up to the platform by means of elevators. Mail facilities are similarly arranged.

East of the elevated tracks a plot of land was allocated for a station yard, where siding accommodation and other facilities are provided, including a provisional engine-shed, a shed for cleaning and repainting carriages, a turntable, a signal tower, mechanics' shops, and stationmen's quarters. On the upper ground there are 5 spur tracks for electric trams and 2 spur tracks for steam locomotives. For these tracks 75-lb. rails are exclusively used, the aggregate length of the tracks being 4 miles 11 chains. The marshalling yard, which is on the street level, is connected with the elevated tracks by means of two tracks of 1 in 60 gradient.

The yard is provided with 17 spur tracks for carriages, 5 tracks for cleaning, and 2 for inspecting carriages. There are also two tracks attached to the car-cleaning shed, one coaling track, one relief siding, and one drill siding. 60-lb. rails are used for these yard sidings, which altogether measure 5 miles 40 chains.

The main building, of which the total length is 1,104-ft. and the width of which varies from 66-ft. to 132-ft., covers an area of 9,364 square yards, of which 108 square yards are taken up by the single-storied, 224 square yards by the two storied, and the rest by the three-storied, portion of the building. The total area of all the floors is 28,968 square yards. The height of the building in the three-storied part is about 54-ft. from the ground level to the eaves. The top of each of the domes, crowning an octagonal vestibule on each side of the building, is about 124-ft. above the ground level. The ground floor is 1.6-ft. above the ground, and the height of the ceiling from the floor is 18-ft. on an average on the ground floor, 14-ft. on the first, and 10-ft. on the second, floor.

Electric traction, as applied to railways, is specially suited to Japan, where the railways pre-eminently traverse mountainous regions, with the consequent prevalence of long tunnels and heavy grades. Already a good beginning has been made

in this respect for suburban service in and around Tokyo and for the mountain section of the Shin-Etsu Line over Usui Pass. The satisfactory results shown by the electrified



Elevated Urban line, Tokyo-Shimbashi, Japan

lines have led the authorities to consider the extension of the field of electric haulage to some of the heavy trunk lines.

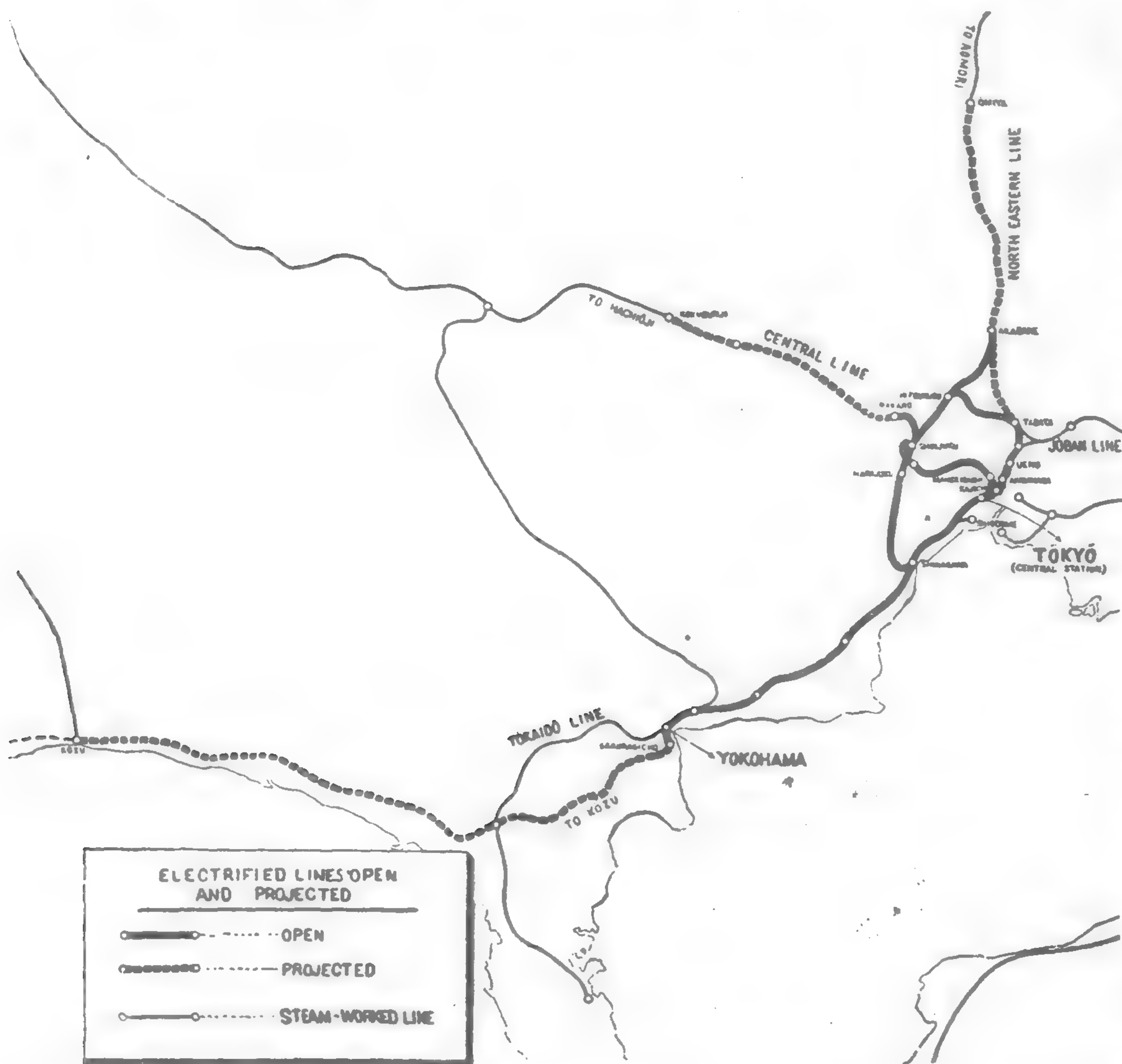
Central Line

The electrification of the suburban service in Tokyo had its inception before the nationalization. In 1905 the now defunct Kōbu Railway electrified the city portion of its line (now styled Central Line)—between its metropolitan terminus, Manseibashi, and Nakano, on the outskirts of Tokyo, a distance of 8 miles. A power station was provided at Kashiwagi, and the current was transmitted to the Ichigaya substation in the form of the 3-phase, 3,000-volt system. In the two substations, one of which was located on the premises of the power station, the current was transformed to 600 volts D.C. by rotary converters. The overhead double-trolley

of relieving congestion claimed urgent attention. The possibilities of electric motive power as a means to this end were investigated by the Railway Management for many years, the result of the investigations being the scheme of electrification on the Yamate and the Tokyo-Yokohama Line.

The Yamate Line, which was taken up for electrification in 1908, is a suburban belt line and serves as an outer connection for most of the main lines radiating from the two metropolitan termini, Tokyo (formerly Shimbashi) and Ueno. It branches off from the Tokaido Line at Shinagawa, the southern gate to the capital, and, skirting the western side of Tokyo, bifurcates at Ikebukuro, one branch leading to Ueno, the terminus of the North-Eastern Line, and the other connecting with the same line at Akabane, 6.2 miles north of Ueno. The distance is 19.3 miles between Ueno and Tokyo, excluding the 3.5-miles Ikebukuro-Akabane branch.

The electrification was completed on the whole line in December, 1910, when a half-hourly steam train service was superseded by an electric train service, cars being run from both directions at intervals of 15 minutes. The trolley line is on the overhead double-trolley system as in the case of the Central Line. Arrangements were made to supply current from the Kashiwagi power station to one portion of the new electrified line through a temporary substation near Ikebukuro, which was equipped with two 100 k.w. rotary converters transplanted from the Central Line for the purpose. For the remaining portion of the line and the Central Line, current was purchased from the Tokyo Electric Tramway Co. at 600 volts D.C. Ten bogie motor-cars were newly built for the use of the Yamate Line. Each of these cars is 50-ft. in length, 8-ft. 6-in. in width, and weighs 26 tons approximately. It contains 52 seats and 44 straps. The car equipment comprises four 50 h.p. D.C. series motors with commutating poles, and two master controllers with multiple unit control equipment and straight air brake with



system was originally adopted for the line, from fear of the possible influence of electrolysis upon the water and gas pipes of the Municipality. There were in service 32 rigid-wheel motor cars, equipped with two 50 h.p. motors and multiple unit control equipment and air brake. The automatic block signal of the "Union" disc type was installed in order to ensure smooth operation. This line, which represents the first electrification in Japan, was taken over by the Government in 1906.

Yamate Line

The suburban expansion of Tokyo and Yokohama in recent years has been such that the limit of capacity of the interurban lines was reached, and some expeditious method

the emergency service valve.

The subsequent development of suburban traffic demanded the improvement of the electric service of the Yamate Line in the shape of the extension and remodelling of the substations, the provision of new rolling stock, and the installation of block signalling apparatus. The Ikebukuro substation was accordingly equipped with two sets of 300 k.w. rotary converters and 300 ampère hours (one hour discharge rating) in place of the existing machines, and secondary batteries with Pirani automatic reversible boosters. The 100 k.w. rotary converters thus superseded were transferred to the Kashiwagi power station, the total capacity of which was in consequence increased to 400 k.w. The power station was also equipped with 300 ampère hour buffer batteries. The

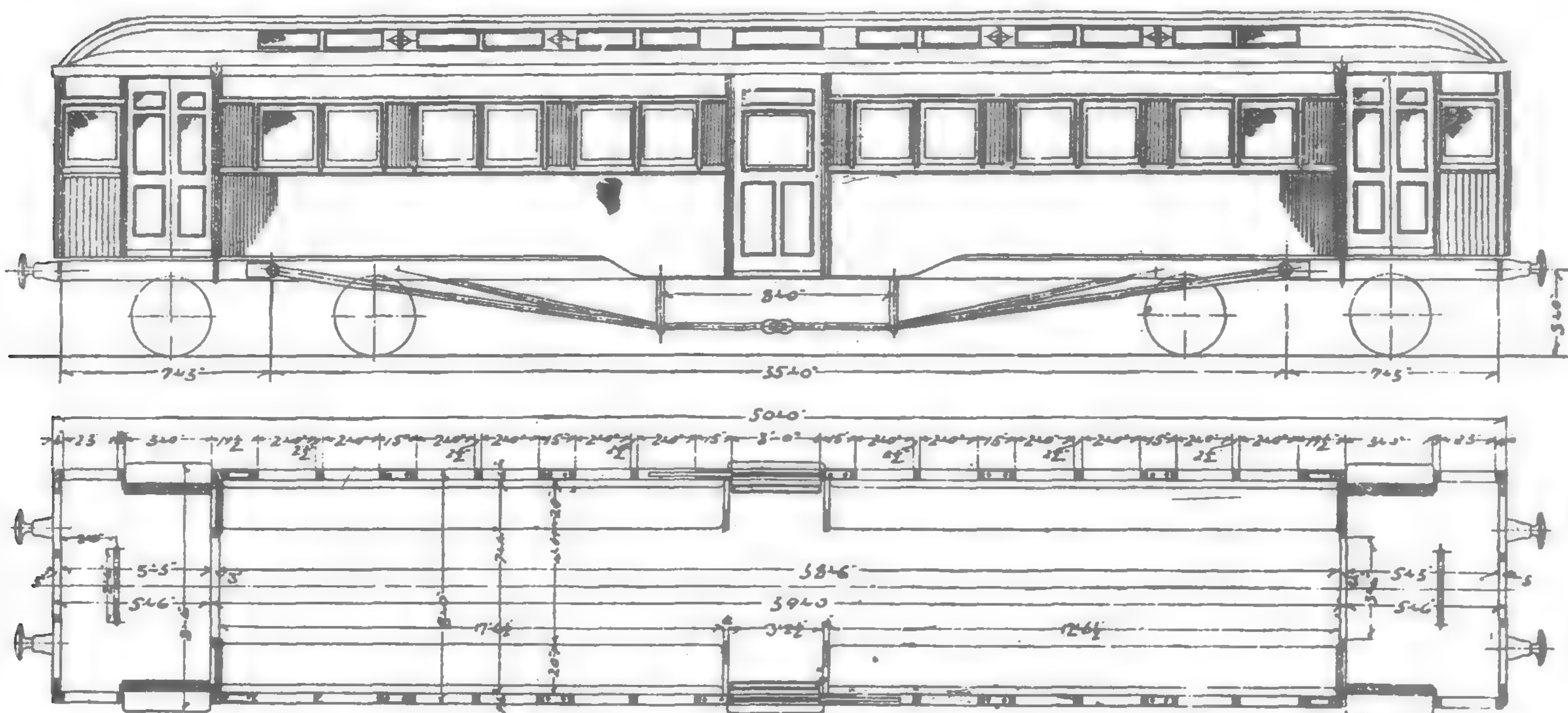
new rolling stock provided comprised 40 bogie cars, 50-ft. long and 8-ft. wide, weighing 26 to 28 tons, and having a seating capacity of 48 with 44 straps. The line then had 48 additional block signals of the Holl's Co. two arms semaphore type installed. This improvement tended materially to increase the capacity of the service, and at present trains of two or three cars coupled are run at intervals of $7\frac{1}{2}$ min. during the rush hours of the morning and evening and of 15 min. for the rest of the day.

Tokyo-Yokohama Line

We have now come to the more ambitious project, which comprises the electrification of the line between Tokyo and Yokohama and complete renovation in the power supply arrangements for all the electrified lines in or near Tokyo.

station is delivered to each substation by extra high-tension 11,000 volt transmission lines, wired on the suspension system, or by underground cables, and the feeders distributing power to the trolley line are mainly wired, except part of the route in or near the city where underground cables are used. The reason why the D.C. 1,200 volt high-tension current was adopted on so short a line (except the city portion where 600 volt. low-tension system is used) was because of the contemplated extension of the electric service on the Tokaido Line to Yokosuka, 38.8 miles from Tokyo, to Kozu, 48.2 miles from Tokyo, and even to Numazu, about 79 miles from Tokyo, upon the completion of the Kozu-Numazu deviation now under construction. The adoption of the high-tension system, though expensive at the outset, will prove far more economical in the event of the projected extension being realized.

Elevation and Section of 4-wheel Bogie Third Class Electric Car, on the Yamate and the Central Line

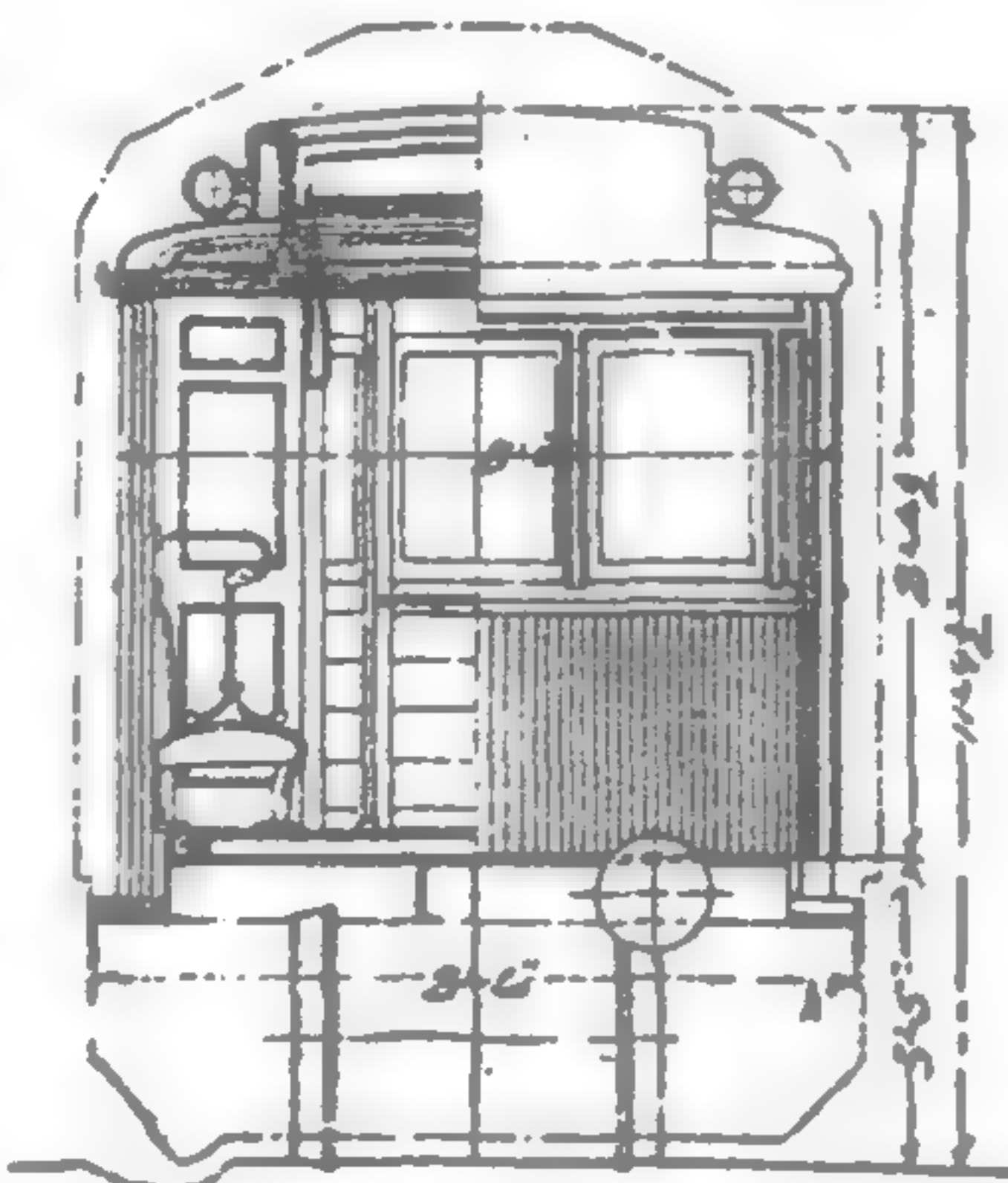


Between Tokyo and Yokohama a double-track line was newly laid for electric operation along the existing steam-worked line. The electrification was started in 1912 and a regular service was inaugurated to the new Yokohama station in May, 1915 and to Sakuragicho (formerly Yokohama) station in December of the same year. Trains composed of two cars, sometimes with a trailer between, are despatched from both ends at intervals of 15 minutes, and $7\frac{1}{2}$ min. during rush hours, when express trains are worked in addition. With the maximum speed of about 54 miles per hour, the whole distance of 19.2 miles is covered in about 47 min., at a schedule speed of 24.5 miles per hour. This represents a substantial gain over the steam operation in point of speed as well as in frequency of service, the latter having been increased from 46 to 100 runs.

Electric System

One of the features of the new project was the provision of a big power station and four substations planned to supply current to the existing Central and Yamate Lines, as well as to the new electrified line between Tokyo and Yokohama, and also to feed the plants and stations about Tokyo for mechanical and lighting purposes. In this way the power supply method was completely remodelled and the supply was placed on a footing of self-sufficiency.

The distribution of power is shown diagrammatically in the illustration. The electric power generated at the power



TRANSMISSION LINE.—Two circuit lines (6 wires) are laid in both directions—northward on the side of Tokyo and southward on the side of Kawasaki (Yokohama). The overhead lines are laid between the power station and the Kawasaki substation (a distance of 3.2 miles) and the power station and Omori (2.5 miles). The lines are carried on iron towers, which are generally placed 150 feet apart along the right of way. The transmission lines are 18-strand B.W.G. No. 12 hard-drawn copper wires on the Tokyo side, and 7-strand B.W.G. No. 10 on the

Kawasaki side. The porcelain insulators used on the transmission lines are capable of standing 25,000-volt pressure per min. The lines are so laid as to have a tension of 1,500 lb. at the lowest temperature. Two underground circuits are laid between the Omori and the Oimachi substation, where they bifurcate, one leading to the Eirakucho (Tokyo), and the other to the Harajuku, substation. The underground cables between Omori and Oimachi are 11,000-volt paper-insulated, lead-covered, armored steel cables. They are 19-strand B.S.G. No. 10, with an outer diameter of approximately 3 inches, weighing about 8 lb. per ft. They are laid at a depth of about 2 feet below the formation level along the right of way, and where they pass under the station yards, level crossings, or through damp soil, they are encased in ducts of iron, clay, or re-inversed iron.

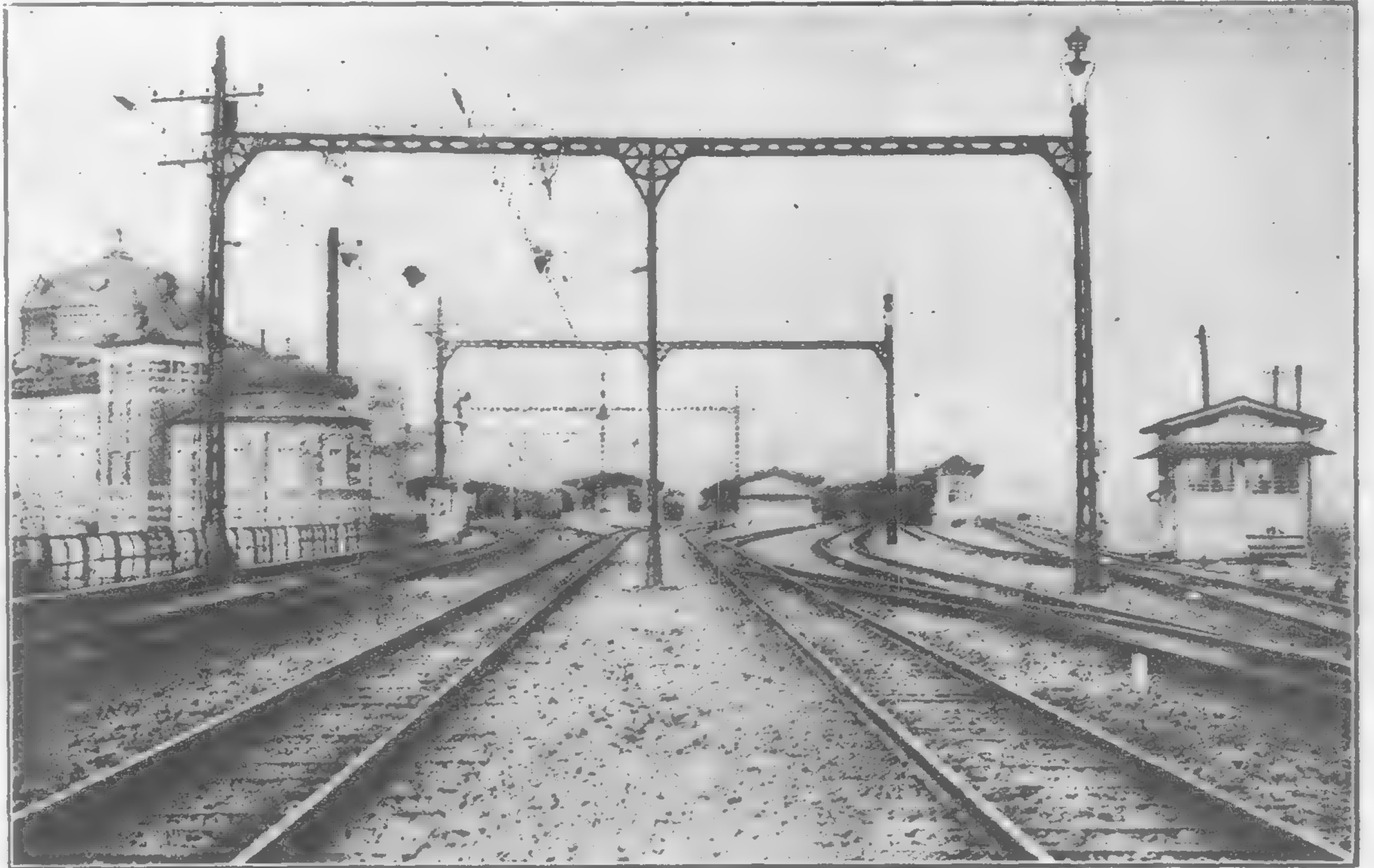
D.C. Distributing Line

TROLLEY LINE.—The portion of the electrified line outside of the capital, i.e., between Shinagawa and Yokohama, is worked by a single trolley line of 1,200 volts D.C. laid on the single suspension system, and the city portion between Tokyo and Shinagawa, by a single trolley line of 600 volts D.C. on the compound catenary system, owing to the number of electrified tracks. The trolley line is B.S.G. No. 0000 hard-drawn, grooved copper wire, and 7-strand B.W.G. No. 8 steel wires ($\frac{1}{2}$ in. in diameter) are used for the messenger cables on the 1,200 volt section, and two of B.S.G. No. 0000 wire, 7-strand B.W.G. No. 6 steel wire for the main messenger, and 7-strand B.W.G. No. 11 steel wire for the auxiliary messenger.

POLE CONSTRUCTION.—As stated above, the overhead power transmission lines, the distribution lines, and the trolley lines are entirely supported on iron structures, which are of the "bridge" type for the compound catenary trolley section and of the "centre pole" or the "side pole" type for the single catenary trolley section.

The poles are placed 200ft. apart on the Tokyo-Shinagawa section, where the line is of three to six tracks, while on the double-tracked section between Shinagawa and Yokohama, they are planted at intervals of about 150ft. apart on tangents, about 120ft. apart on curves of 40ch. radius and over, and about

75ft. apart on curves of 15ch. radius and over. Every third pole has a wooden steady arm about 5ft. long fastened thereto by means of springs. The dead section is provided at Shinagawa station where the 1,200 volt section passes into the 600 volt. There the trolley wire for a length of 300ft. is absolutely insulated from the adjacent sections, so that the motorman may change the equipment of his car from 1,200 volt to 600 volt or vice versa.

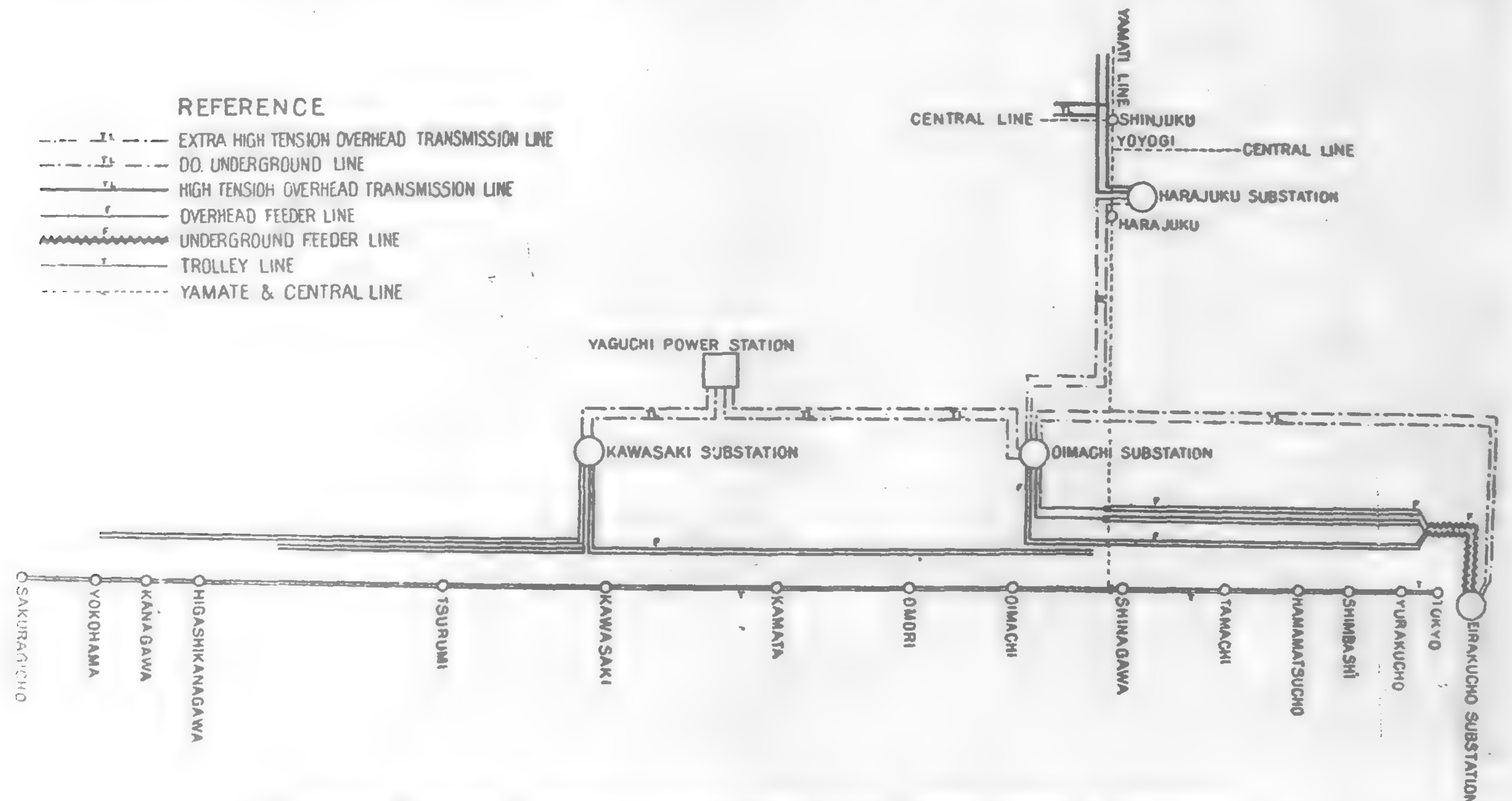


Electrified Line, Tokyo Station Yard

FEEDERS.—For feeders, overhead wires carried on the main poles are laid throughout the route, except under the ground of Tokyo station yard. The current feeding points are located at each station and at an inter-station point about one mile apart from each other. Automatic section switches of G.E.S.W. 13 type are inserted into the feeders, used for

REFERENCE

- — — — — EXTRA HIGH TENSION OVERHEAD TRANSMISSION LINE
- — — — — DO. UNDERGROUND LINE
- — — — — HIGH TENSION OVERHEAD TRANSMISSION LINE
- — — — — OVERHEAD FEEDER LINE
- — — — — UNDERGROUND FEEDER LINE
- — — — — TROLLEY LINE
- — — — — YAMATE & CENTRAL LINE



Schematic Diagram for Transmission and Distribution of the Tokyo-Yokohama Electrification

feeding purposes and sectionalizing feeders, so that the supply of the power may be automatically stopped for any section which may happen to require emergency repair,—a device which (by connecting the trolley line with the feeder lines at many feeder points) has the further advantage of minimizing the loss of power due to distribution.

RETURN CIRCUITS.—The rails of the new electrified tracks between Tokyo and Yokohama are used for main return circuits, while all the rails of the steam-worked train tracks serve as auxiliaries. Each parallel rail is connected with the other by cross bonds placed at intervals of about one mile. The Tokyo-Shinagawa section is provided with impedance cross bonds, which are designed to sectionalize the 60-cycle alternating current track circuits for the automatic block signals.

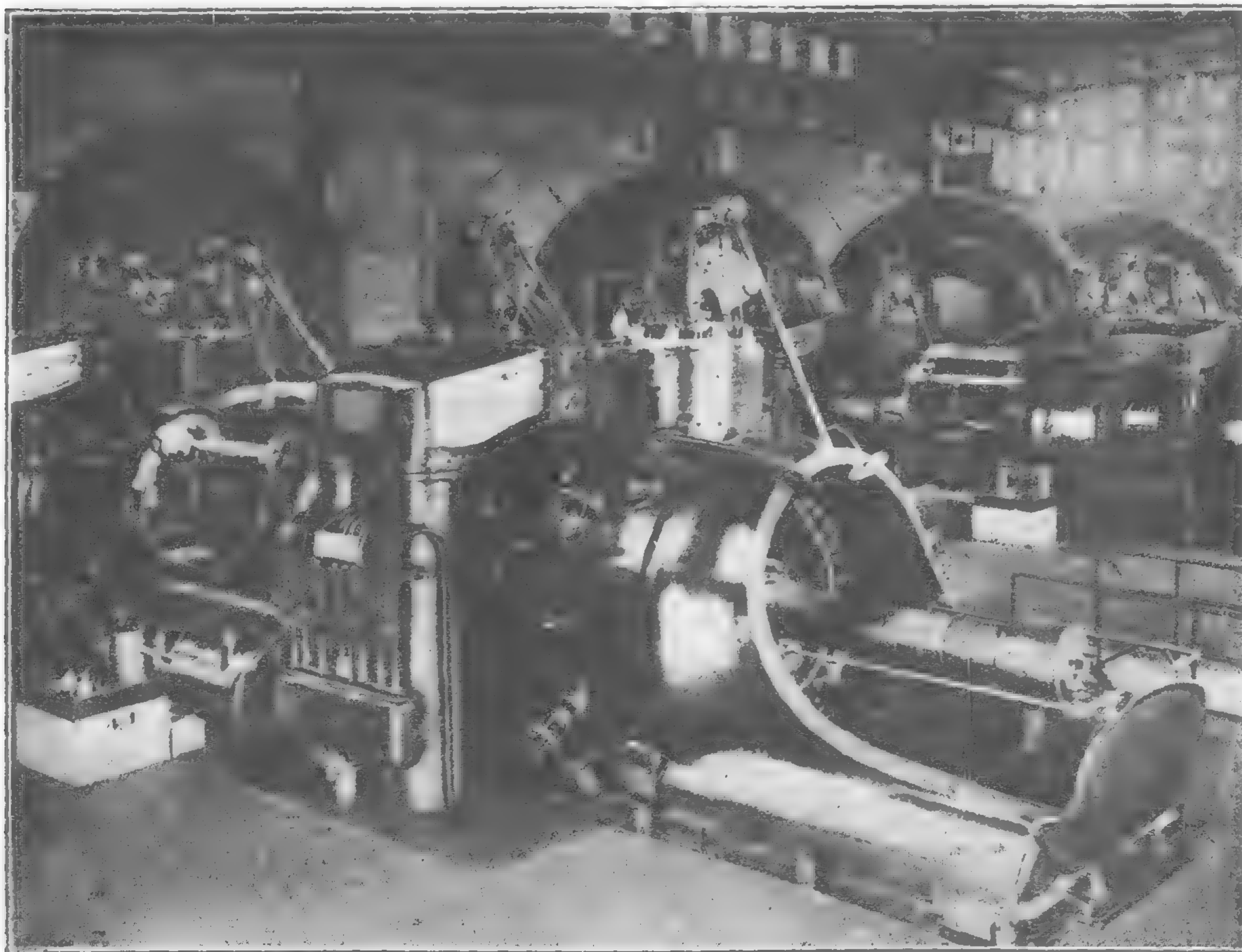
LIGHTING AND MECHANICAL POWER SUPPLY.—The current, after being stepped down from 11,000 volts to 3,300 volts at the sub-stations, is distributed to each plant and each workshop, where it is further stepped down to 100 volts for lighting and 200 volts for mechanical purposes.

POWER STATION.—The Yaguchi power station is located practically halfway between Tokyo and Yokohama and about a mile off the railway lines. The peculiarity of the station is

that it is driven by gas engines operated by Mond's power gas. The station is equipped with four gas engine alternators, three sets of Mond gas producers, with ammonium sulphate recovery apparatus, two 400 k.w. D.C. generators driven by a non-condensing steam engine, and two batteries of Babcock and Wilcox boilers. The gas engine, of the Nuremberg type, is a twin-tandem, double-acting engine. Each of the cylinders is 47ft. 5in. in diameter and 51ft. 125in. strokes, with a speed of 94 revolutions, and is capable of developing 2,163 h.p. effective.



Electrified Line, Tokyo-Yokohama



Generating Room, Yaguchi Power Station

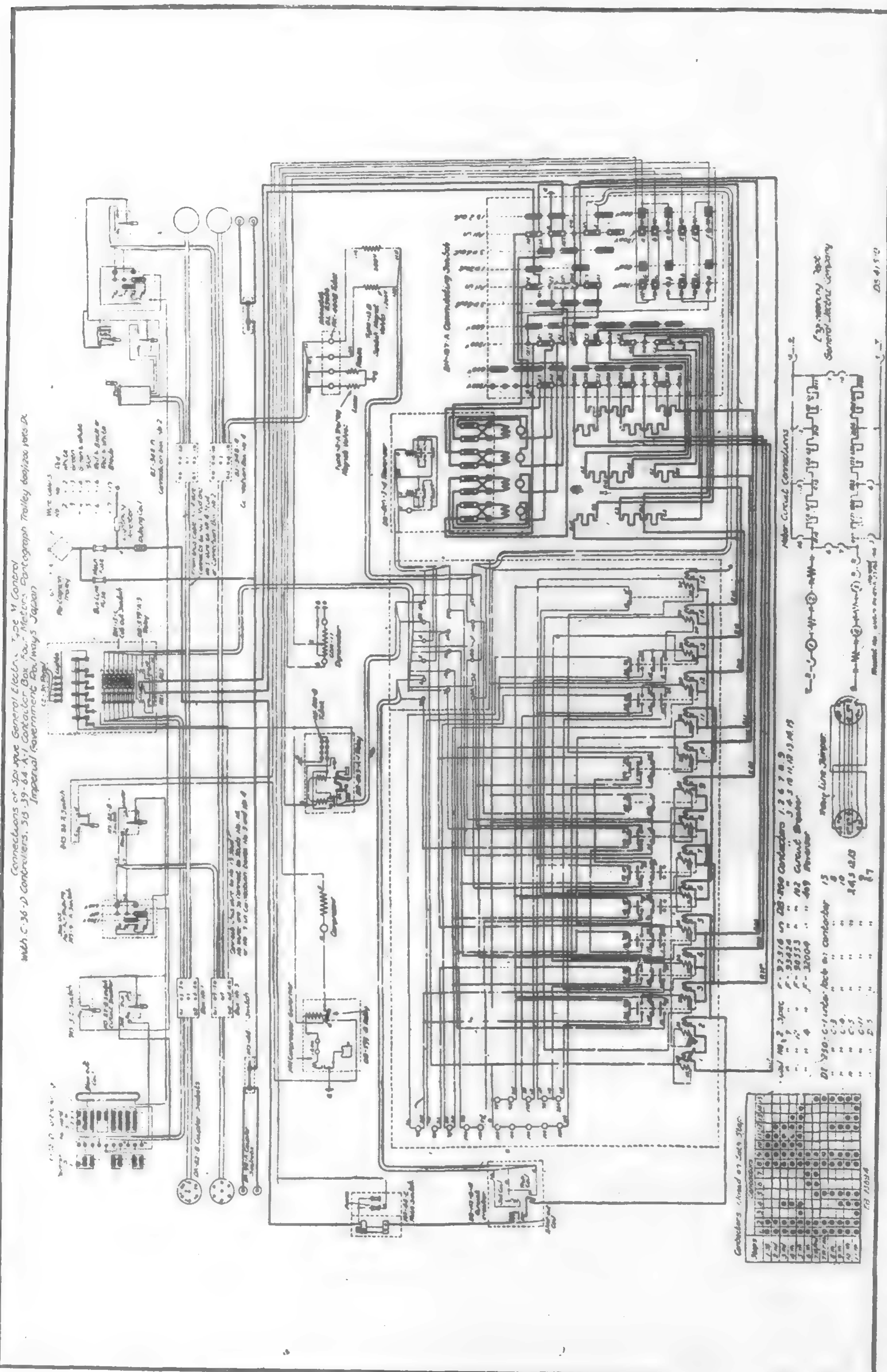
The engine is connected direct to the 1,500 k.v.a. 3-phase alternators 11,000-volt, 25-cycles. The large revolving field of the alternators does the duty of fly-wheels in keeping its cyclic variation below $1/250$, a fact which facilitates the parallel operation of the generators. Two inlet valves are fixed on top of each cylinder and are controlled by the same eccentric, with the exhaust valves fixed under the cylinder. Exhaust gases are conducted to the exhaust boiler where their thermic power is utilized for making steam.

The eccentric is put on the crank shaft, which gears with teeth with the main shaft and makes one revolution per two revolutions of the main shaft, so that one impulse for the inlet and exhaust valves is obtained for every two revolutions. The inlet valves are opened by sliding blocks worked by two rolling levers and regulators, the frequency of the impulses

being arranged to vary according to the position of the blocks. Should it be necessary, however, to alter the strength of the charge, as a result of the quality of the producer gas being

changed by the kind of coal used or any other circumstances, means are provided by which the area of the gas and air openings in the regulator may be varied. Three igniters are in-

Three igniters are installed on each cylinder. The pistons, the cylinders, the exhaust valve cases and exhaust valve sheets are cooled by a continual circulation of water. The engine is set in motion by means of two air compressors, each of which is worked by a 30 h.p. motor-dynamo. It may be remarked that the unit generator for such a power plant ought to be of at least 3,000 k.w. in size, but the structural limitations of the Mond gas engine of tandem compound type obliged the Railway Management to adopt a machine of 1,500 k.w., which is the maximum capacity for an engine of this structure. Again, in adopting the gas engine, which as a matter of course entails many difficulties in driving, especially for the parallel running of the alternators at fluctuating load, the Railway Management was chiefly guided by considerations of economy, for, apart from the relatively low cost of the initial installation of the machine, the gas engine of this type was judged especially adaptable for the use of cheap coal. It was ascertained as a result of tests that when in operation at full load, no more than 2-lbs. of coal are required per k.w. of the watts output. A further advantage of the apparatus is that it is contrived for recovering the ammonium sulphate as a by-product, and this makes up for one-third of the cost of fuel.



SUBSTATIONS.—Four substations have been newly established, in addition to the two in existence at Ikebukuro and Kashiwagi. One of the new substations is located in the compound of the new Tokyo station at Eirakucho, while the three others are situated on the outskirts of the city—at Harajuku, Oimachi, and Kawasaki. In addition to the rotary converts or motor generator sets, all these substations are provided with storage batteries and automatic reversible booster sets, it being designed to buffer the fluctuations of load at the Yaguchi power station, where the generators are driven by gas engines suited to operate at constant load. The power delivered from the power station at 11,000 volts, 25-cycle 3-phase current, is partly converted to 1,200 volts D.C. at the Kawasaki substation and to 600 volts D.C. at the three other substations for traction purposes, and partly stepped down to 3,300 volts for lighting and mechanical power for the use of the stations and workshops. As regards the converter equipment in the new substations for the 600 volts section, the Eirakucho substation has four sets of 500 k.w. rotary converters, the Oimachi, three sets, and the Harajuku, two sets. In addition, each substation is provided with one set of 1,000 ampère-hrs. storage batteries (one hour discharge rating) of 600 volts at the terminals and two sets of Pirani automatic reversible boosters.

The equipment of the Kawasaki substation comprises three sets of 1,000 k.w. synchronous motor generators, which consist of two 500 k.w. 600 volts D.C. generators directly connected with 1,440 h.p. 11,000 volt synchronous motors, and 1,000 ampère-hrs. storage batteries of 1,200 volts at the terminals, connected with two sets of Lancashire automatic reversible boosters. The switch boards are so arranged as to connect two generators either in series or in parallel, making them capable of running the section at either 1,200 volts or 600 volts. The special feature of the Kawasaki substation is that the plant, which is designed to convert alternating current to high-

tension direct current, is operated in connection with the buffer batteries and the automatic reversible boosters, and it is gratifying to note that since its establishment the substation has been working excellently. All the substations are provided with step-down transformers of between 11,000 volts and 3,300 volts for lighting and power supply to the stations and workshops. The Eirakucho substation has four 150 k.v.a. transformers, the Harajuku, four 240 k.v.a., the Oimachi, four 130 k.v.a., and four 100 k.v.a., and the Kawasaki, four 150 k.v.a.

CAR EQUIPMENT.—Forty motor-cars and fourteen trailers were newly built and put into commission on the electrified line between Tokyo and Yokohama. These cars can be operated on both 1,200 volt and 600 volt sections at the same maximum speed. The car body of the motor-car is 18ft. 6in. wide, 50ft. long (from vestibule to vestibule), and 12ft. 15in. high, weighing about 14 tons. The car body of the trailer is 8ft. 6in. wide, 52ft. 11in. long, and 12ft. high, weighing about 15 tons. The rolling stock comprises three kinds—2nd and 3rd class composite, 3rd class cars, and luggage and postal vans. The interior of the 3rd class motor car is 7ft. 10in.

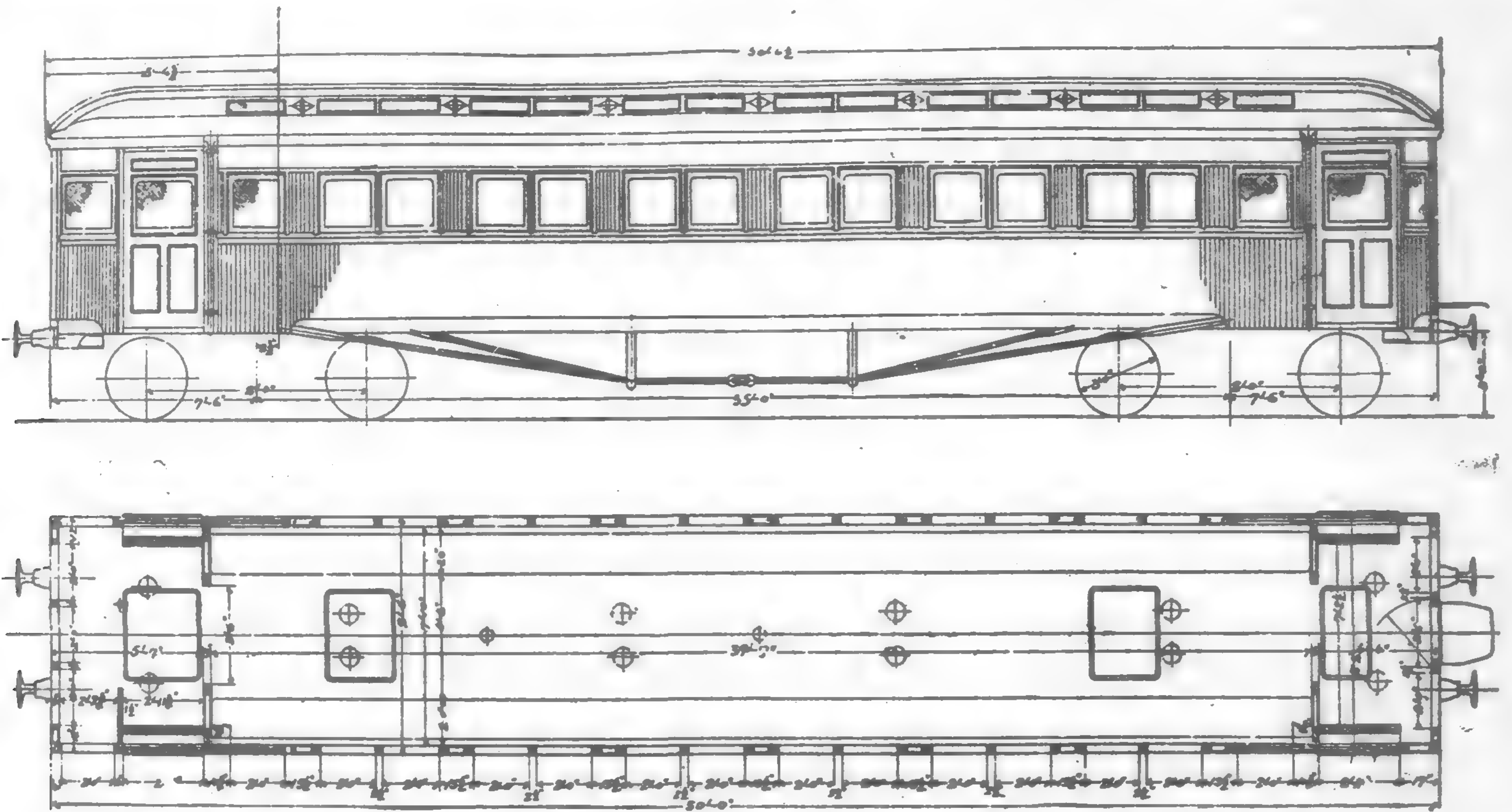
wide and 39ft. 7in. long, having a seating capacity of 56, with 47 straps. The 2nd class compartment is 19ft. 7.5in. long and has two longitudinal seats accommodating 12 passengers each. The trailer is built for 82 passengers; it has a seating capacity of 26 in the second class and 30 in the third class, with 26 straps. The truck is a 4-wheel bogie of the M.C.B. type with wheels of 36in. diameter. The length between the wheel bases is 8ft., and the bogie centres are 35ft. apart for the motor car, and 36ft. for the trailer. Each motor car is equipped with four motors of 105 h.p. hourly rating with a temperature rise of not exceeding 70 to 75 deg. C. by thermometers. The armature is of standard construction, being equipped at one end with fan braid designed to neutralize the rise in temperature. It is this ventilating apparatus that enables the motor to develop 105 h.p., which represents the highest rating possible on the 3ft. 6in. gauge line. The controller is of the multiple unit control system. By means of this device, the motorman, from his position at the front of the forward car, simultaneously controls the motors. When operating on 600 volts, the four motors are first arranged in series-parallel and then are connected in parallel; on 1,200 volts the motors are all connected in series and then in series-parallel. The motor connections from 600



Electric Train

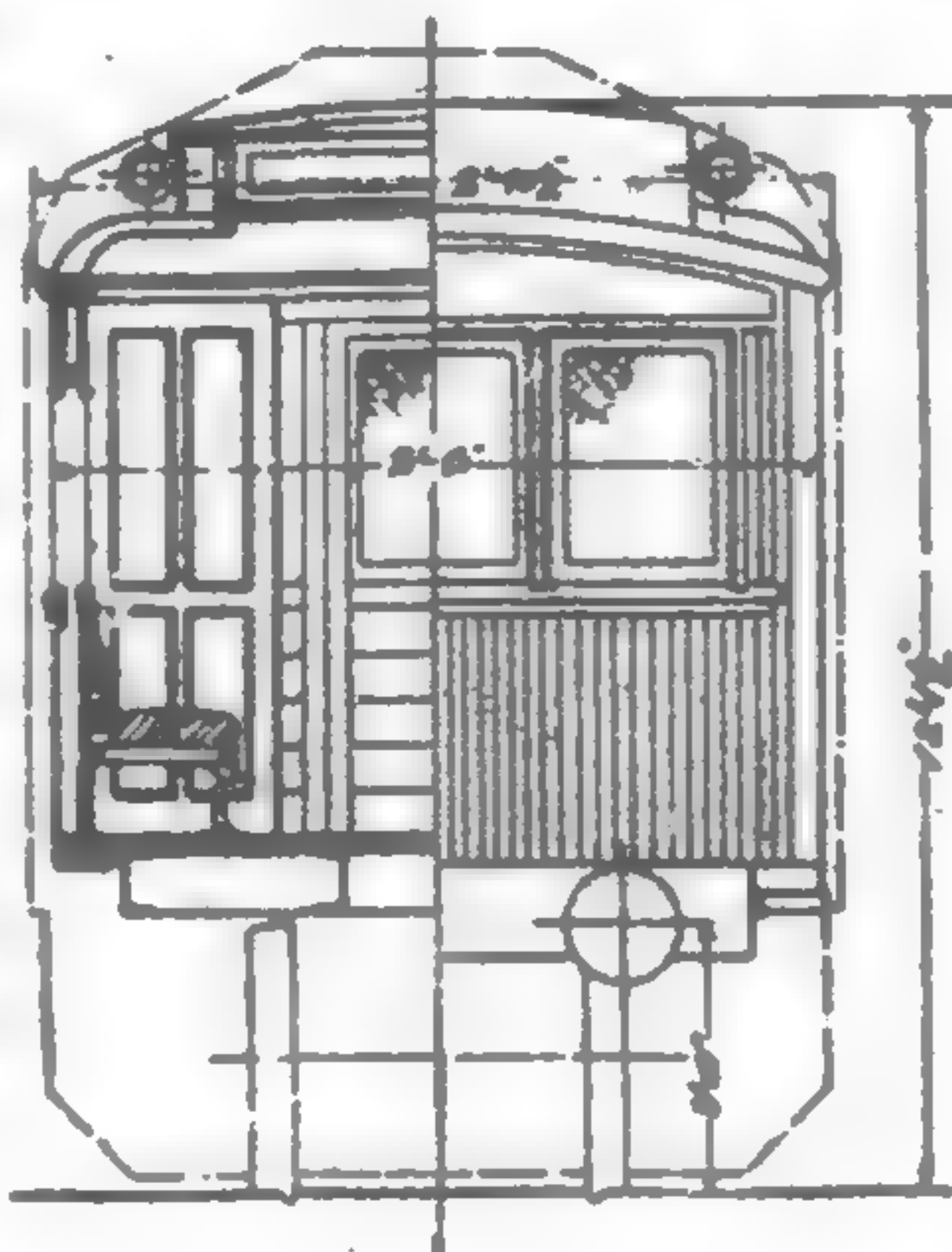
volts to 1,200 volts are changed by a commutating switch, operated either electrically or electro-pneumatically. The safety of operation is further ensured by means of a protective relay, the function of which is to prevent 1,200 volt potential being inadvertently applied to the 600 volt control and lighting circuits, and also to the motors when they are connected for 600 volt operation. The main claim in favor of the master controller is that it enables the motorman to adjust the acceleration of the train by means of the current limit relay which governs the rate of acceleration, so that he can easily handle his machine even when he has not acquired any particular skill. The air-brakes are of combined straight and automatic type. This brake acts on the straight air brake system in single-car service, while, in operating a train of less than 5 cars coupled, it is converted into an automatic brake by the change of valve connections. The motor for air-compressing purposes acts at 600 volts, and at 1,200 volts the additional supply of energy is obtained from the dynamotor. The current is collected from the overhead wires by the pantograph, which is raised or lowered by compressed air by means of two magnet valves installed in the motorman's compartment.

Elevation and Section of 4-wheel Bogie Third Class Electric Car, on the Tokyo-Yokohama Line; passenger capacity, 103; 56 seats and 47 straps



COST.—The electrification of the Yamate Line cost Y.2,049,650, including Y.1,346,650 on the rolling stock. The Tokyo-Yokohama electrification and the connected works on power supply arrangement cost Y.6,987,000, of which Y.2,652,000 was claimed by the provision of the power station, Y.1,008,400 by the four new substations, Y.1,008,400 by the line equipment, and Y.1,649,000 by the rolling stock.

RESULTS OF WORKING OF ELECTRIC MOTOR CARS.—The results of working of the electric motor cars on the Central, the Yamate and the Tokyo-Yokohama Line are shown below :—



Year ending March 31	Electric Car		Car mileage	Current consumption	
	No.	Seating capacity			
			Mile	K.W.H.	K.W.H.
1908 ...	26	1,040	409,664	1,151,692	2.81
1909 ...	28	1,120	510,569	1,753,508	3.43
1910 ...	42	2,515	725,680	2,318,379	3.19
1911 ...	44	3,621	1,635,185	3,823,363	2.34
1912 ...	66	4,597	1,910,052	4,563,145	2.39
1913 ...	72	4,842	2,343,978	5,362,284	2.29
1914 ...	86	6,188	2,476,248	5,823,941	2.35
1915 ...	124	10,625	2,694,687	5,955,819	2.21
1916 ...	130	11,458	5,046,775	11,380,603	2.26
1917 ...	125	10,984	6,496,096	14,569,041	2.30

Education in Netherlands India

The article "Metamorphosed Chinese in Java" in the December number of the FAR EASTERN REVIEW contains some interesting facts concerning the life of the Chinese settlers in the Dutch East Indies, who, like those in the Straits Settlements and the Federated Malay States, often rise by their labor and their thrift to wealth and social standing and who prefer living under Western legislation to returning to their native land with its purely Chinese conditions of existence.

The author of the article, however, cannot have been quite *au courant* of the extensive educational work that is being carried on in the Netherlands Indian Archipelago, and he is mistaken where he says that the Chinese there persistently refuse to study Dutch, and that the Netherlands colonial authorities, have done little to encourage their educational work or their commercial expansion. These are superficial general remarks which show that the author wrote without studying his subject and without consulting any statistics.

Neither the Netherlands nor the British Governments give any subsidies to the so-called "Hui-kwan schools" which have been started within their colonial territories under the aegis of the Board of Education in Peking. Both, however, provide their own schools and educational institutions.

It is difficult to ascertain how many Chinese children in the Netherlands colonies go to many hundred schools for the natives in which the Dutch language is taught.

The latest statistics are unfortunately not at hand; but we find in the official publications for the year 1917 that there were thirty-one special Dutch-Chinese schools where the medium of instruction is Dutch, attended by no less than 6,407 pupils. A visit to these schools would have shown that they are second to none and probably superior to most of the educational institutions of the Far East as regards *personnel*, equipment and methods of instruction. Moreover there is a normal school in which Chinese are educated to be school teachers and in which the same standard has to be reached as for school teachers in Holland. In addition to the pupils of these various schools there are several hundred Chinese youths who attend the schools set apart for Dutch children, and also the different higher schools and colleges. These latter give access to the universities in Holland, and at the present moment there are nearly a hundred Chinese students from Netherlands India who follow the different university courses at Leyden, Amsterdam and Utrecht, or the Technical University at Delft, and who will one day return to Java and the other islands as doctors, lawyers, engineers, etc.

The author says that the Dutch regard the Chinese as a dangerous alien element. He seems to be unaware of the fact, that the Dutch business houses appreciate the Chinese traders (whether wholesale or retail), as capable, almost always honest, and practically indispensable; that the planter and the manufacturer would not like to do without their industrious Chinese workmen; and that the Government even allows the Chinese to enter official service in various capacities.

These few data show that the article in question is to say the least of it somewhat inaccurate.

Statistics of the Japanese Government Railways for the Year Ended March 31st, 1918

(COMPARED WITH THE FOUR PRECEDING YEARS).

Item	Year	1917-18	1916-17	1915-16	1914-15	1913-14
Area (square miles)		+ 129,247	+ 129,247	+ 129,247	+ 129,247	+ 129,247
Population		+ 56,035,100	+ 55,224,500	+ 54,439,400	+ 53,668,600	+ 53,362,682
Miles of line worked (single) (m.ch.)		5,206.35	5,094.18	5,000.66	4,944.67	4,731.43
Miles of second track (")		771.59	741.04	734.52	720.06	734.11
Miles of third track (")		1.07	1.07	1.07	1.07	.49
Miles of fourth track (")		16.34	16.34	16.34	16.29	3.24
Miles of sixth track (")		3.77	3.77	3.77	3.77	1.33
Total miles of main track worked (")		5,999.52	5,856.60	5,756.76	5,686.26	5,470.71
Total miles of all tracks (")		9,313.28	9,029.19	8,840.14	8,472.29	8,323.22
Average area per mile of line (sq. m.)		21.5	22.1	22.5	22.7	23.6
Average miles of lines per 100,000 of population		10.7	10.6	10.6	10.6	10.3
Average miles of line worked { passenger traffic.		5,855.4	5,747.1	5,670.1	5,529.5	5,298.0
Number of Stations { goods traffic.		5,916.8	5,805.9	5,725.9	5,581.9	5,344.3
		1,712	1,668	1,630	1,604	1,529
Capital (yen)		1,189,913,734	1,108,060,237	1,050,386,964	1,006,923,089	973,091,496
Capital per mile of line (yen)		198,269	189,131	182,391	176,979	177,808
Working revenue (yen)		183,525,143	141,255,333	120,212,355	112,169,616	113,477,055
Working expenses (yen)		84,370,026	61,163,543	55,601,684	57,178,286	55,551,246
Profit (yen)		99,155,117	80,091,790	64,610,671	54,991,330	58,925,809
Percentage of expenses to revenue		46	43	46	51	48
Percentage of profit on capital		8.3	7.2	6.2	5.5	6.1
Profit :		99,155,117	80,091,790	64,610,671	54,991,330	58,925,809
Deduct—Inspection and survey expenses (yen)		124,044	86,104	98,841	131,248	188,258
Deduct—Additional works expenses (yen)		12,966,438	3,946,652	2,256,358	3,362,088	2,617,392
Deduct—Interest charges (yen)		40,983,842	39,815,309	36,782,258	37,255,427	35,575,844
Deduct—Subsidies to Private Light Railways (yen)		1,500,000	1,250,000	1,250,000	1,000,000	750,000
Balance (surplus) (yen)		43,580,793	34,993,725	24,223,218	13,242,567	19,794,315
Working revenue per mile (yen)		30,982	24,312	20,982	20,084	21,219
Working expenses per mile (yen)		14,243	10,527	9,705	10,238	10,200
Profit per mile (yen)		16,739	13,785	11,277	9,846	11,019
Working revenue per train-mile (yen)		2.63	2.19	2.03	1.95	1.98
Working expenses per train-mile (yen)		1.21	.95	.94	1.00	.95
Profit per train-mile (yen)		1.42	1.24	1.09	.95	1.03
Locomotives		2,827	2,727	2,680	2,611	2,500
Passenger carriages		6,903	6,875	6,836	6,699	6,453
Goods wagons		46,600	44,391	43,592	43,702	42,705
Aggregate weight of locomotives (ton)		167,664	158,769	148,310.41	142,313.22	132,333.65
Aggregate number of seats of carriages		300,132	299,036	295,029	285,347	269,851
Aggregate loading capacity of wagons		467,021	428,404	408,244	390,345	365,852
Employees		125,888	115,282	112,102	114,964	112,087
Monthly compensation of employees (yen)		2,677,181	2,253,732	2,191,803	2,206,463	2,109,271
Number of passengers carried		245,234,480	197,043,320	172,290,045	166,092,421	167,773,143
Number of passengers carried one mile		5,515,546,330	4,255,374,717	3,856,536,966	3,623,743,236	3,690,964,619
Passenger-miles per mile		941,959	740,439	680,153	655,347	696,671
Passengers per train		159.9	133.4	125.7	123.2	131.7
Passengers per vehicle		12.7	10.9	10.3	10.2	10.7
Average miles of journey per passenger		22.5	21.6	22.4	21.8	22.0
Average number of journeys per capita of population		4.4	3.6	3.2	3.1	3.1
Passenger earnings (yen)		74,159,526	58,745,033	52,220,354	49,942,049	51,363,668
Passenger earnings per mile (yen)		12,665	10,222	8,949	9,032	9,695
Passenger earnings per passenger per mile (yen) . . . . .		.0134	.0134	.0135	.0138	.0139
Coaching receipts (yen)		84,725,517	64,773,111	57,282,341	54,671,971	55,975,342
Coaching receipts per mile (yen)		14,470	11,271	10,103	9,887	10,565
Coaching receipts per train-mile (yen)		2.46	2.03	1.87	1.86	2.00
Tonnage of goods hauled		48,753,041	42,100,734	35,800,664	35,272,875	36,348,362
Tonnage of goods hauled one mile		5,033,344.425	4,179,134,660	3,309,518,677	2,982,798,481	3,053,852,638
Ton-miles per mile		850,687	719,808	577,991	534,370	571,422
Tons per train		142.6	128.0	115.5	106.7	103.9
Tons per vehicle		5.1	4.6	4.3	4.2	4.1
Tons per loaded vehicle		6.5	5.9	5.6	5.5	5.5
Average miles of goods hauled per ton		103.2	99.3	92.4	84.6	84.0
Tonnage of goods per capita of population . . . . .		.87	.76	.66	.66	.68
Goods earnings (yen)		87,722,527	69,331,616	56,666,369	51,399,220	53,032,716
Goods earnings per mile (yen)		14,826	11,942	9,896	9,208	9,923
Goods earnings per ton per mile (yen) . . . . .		.0174	.0166	.0171	.0172	.0174
Goods wagon receipts (yen)		88,439,480	69,861,847	57,043,485	51,750,496	53,368,932
Goods wagon receipts per mile (yen)		14,947	12,033	9,962	9,271	9,986
Goods wagon receipts per train mile (yen)		2.51	2.14	1.99	1.85	1.82
Passenger train mileage		*28,821,355	*26,050,412	*25,100,646	*23,366,888	*22,364,524
Goods train mileage		30,441,886	26,571,150	21,946,022	21,380,696	22,809,091
Mixed train mileage		10,531,872	11,921,812	12,283,814	13,631,283	12,229,188
Total train mileage		69,795,113	64,543,374	59,330,482	57,378,867	57,402,803
Locomotive mileage		85,001,607	77,913,771	71,416,931	69,250,350	68,744,136
Passenger car mileage		434,861,588	391,883,613	374,625,651	355,101,502	345,223,815
Goods wagon mileage		988,281,133	917,937,539	776,732,616	715,924,526	736,984,397
No. of vehicles coupled per train { passenger car		12.6	12.3	12.2	12.1	12.3
No. of vehicles drawn per locomotive { goods wagon		28.0	28.1	27.1	25.6	25.1
		19.68	16.8	16.1	15.5	15.8

N.B. (*) including the mileage travelled by electric trams and steam motor cars converted at 10 cars=one train.

(†) covering the Main Island, Shikoku, Kyushu and Hokkaido.

The Railways of China

Important Facts and Figures Connected with the Existing System

THERE are 6,836 miles, or 11,001.254 kilometres, of railway at present operating in China. The railway system as it exists to-day is located principally north of the Yangtze River. The Shanghai-Nanking line, with the recently connected up Shanghai-Hangchow-Ningpo line, extends the system into south China. Construction now in progress, and plans for future construction promise to connect up the present short lines in the south so as to duplicate there ultimately the facilities now serving the north.

Speaking of the eighteen provinces, China has approximately 735 square kilometres of territory and 67,000 population for each kilometre of railway. Expressed in miles, China has approximately 460 square miles of territory and 107,000 population for each mile of railway. India has 40 square miles of territory and 8,600 population for each mile of railway. The United States has 12 square miles of territory and 3,800 population for each mile of railway. The extent of waterways in China probably will always serve to keep these average figures higher in China than in countries not so favored. Yet railways tend to become more and more an integral part of the industrial machinery of a nation, and these averages, therefore, measure to a certain extent the advance of industrial progress.

Since 1915 main and branch lines have been extended 78,056 kilometres, while loops and sidings have been increased 169,420 kilometres. Second track is almost unknown. Less than eight per cent. of the total length of line consists of branches, and out of 6,913,315 kilometres of track, nearly 75 per cent. is found in main line.

The map given in this issue confirms the fact that Chinese Government railways are essentially through lines connecting strategic points, commercially and politically speaking—the hub of the system as it exists to-day being Peking.

Railway lines in China may be classed under three distinct heads, Government Railways open to traffic, but still technically under construction, private and provincial railways, and "Concessioned" lines.

The word "owned" as used below is employed in a technical sense. It indicates the extent of line behind the securities issued for a particular railway, or behind the investment by the Government in particular railways.

To explain the headings in Table 7 it must be stated that a main line is the line of single track over which trains are operated between the principal terminals. A branch line is one built from a junction point on a main line to an outlying station over which regular traffic trains are run for public services. Other lines built from junction points are classed as sidings regardless of their length. Industrial lines are sidings which connect a main line with a factory, mine, or important industrial enterprise, and are operated exclusively for the use of such establishments.

The order of the provinces named in the table is the same as in previous reports of the Ministry of Communications, and formerly was based on the length of main line each province contained. The total length of main line and branches in 1918 was 5,521.942 kilometres. This represents an increase of 22,169 kilometres, for which the Peking-Suiyuan line* is responsible. That line during 1918 built the Tatung coal branch, in Shansi province, 19.568 km., and the Hsuanghuafu

branch, in Chihli province, 8.646 km., a total of 28.214 kilometres.

In addition the Kirin-Changchun made rectifications of its previous figures adding .016 kilometres (Kirin Province) while a new survey of the Chuchow-Pinghsiang line made on the metric system resulted in a reduction of the kilometrage of that line by 6.061 (provinces of Hunan and Kiangsi).

TOTAL KILOMETRES MAIN AND BRANCH LINE IN CHINA.

Government Railways :—

	Kilometres	Kilometres
In Operation ... ..	...	5,521.942
Operated by construction forces :—		
Lung-Hai (Lanchow-Haichow)†	276.300	
Hupei-Hunan	475.142	
Ssu - Tsen (Ssupingkai - Cheng-chiatun)	87.870	941.312
Total Government Railways		6,453.254

Provincial and Private Railways :—

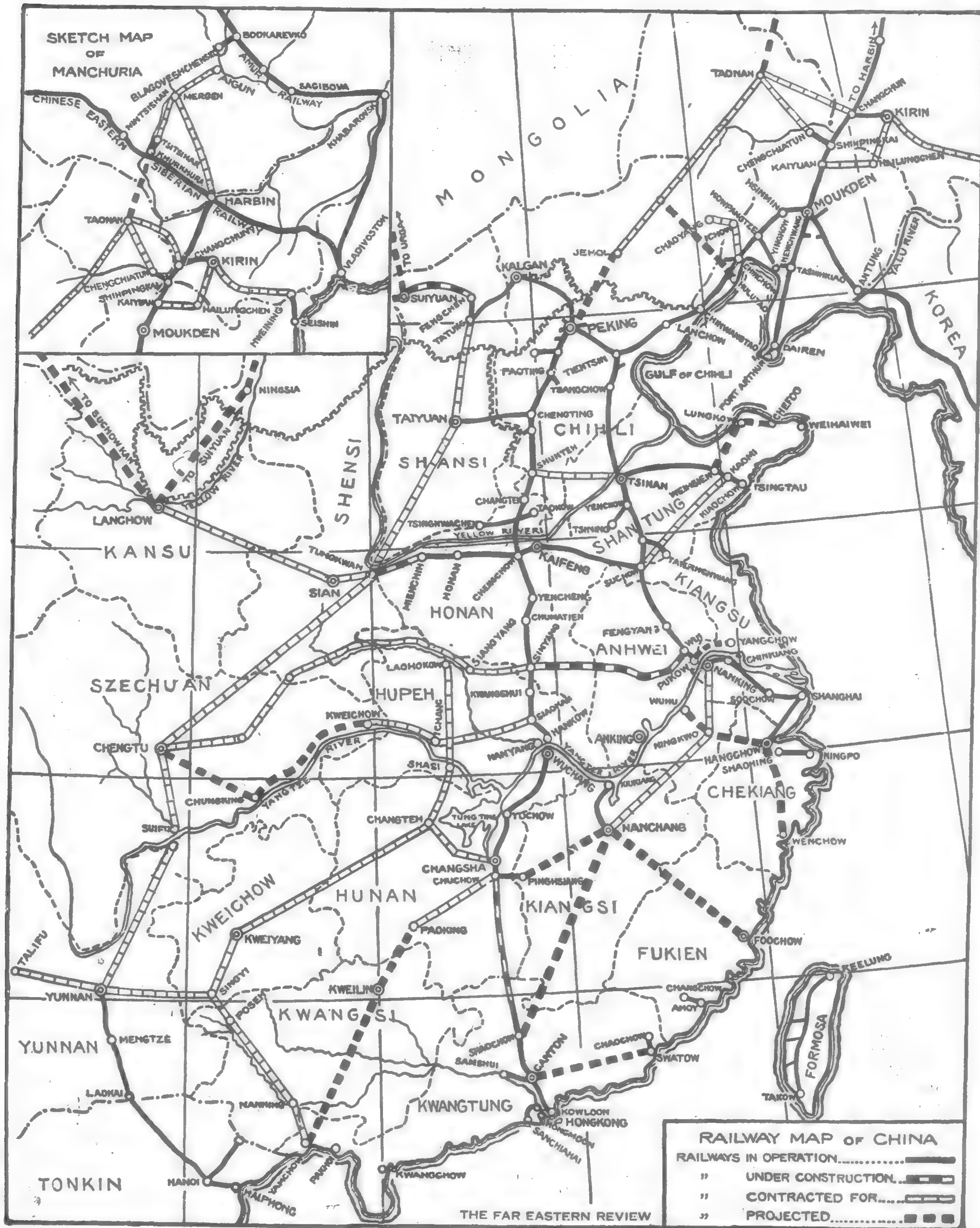
Kwangtung	225	
Kiukiang-Nanchang	129	
Sunning	109	
Swatow-Chaochowfu	42	
Nanking City	11	
Chung Hsing Mining Co.	43	
Tayeh Mining Co.	30	
Ching Hsing Mining Co.	15	
Kailan Mining Administration	16	
Taiyaokou Mines	34	
Tsitsihar City	29	683.000
Total subject to control of the Ministry of Communications		7,136.254
Concessioned Railways :—		
Chinese Eastern	1,722	
South Manchurian	1,150	
Shantung	493	
Yunnan	465	
Canton-Kowloon (British Section)	35	3,865.000
Total kilometres of railways in China (Miles, 6,836)		11,001.254

NAMES OF THE GOVERNMENT RAILWAYS.

Termini	Official Abbreviated Name	Km. owned
Peking-Hankow	Kin-Han	1,305.671
Peking-Mukden (Fengtien)	Kin-Feng	986.650
Tientsin-Pukow	Tsing-Pu	1,106.840
Shanghai-Nanking	Hu-Ning	327.098
Shanghai-Hangchow-Ningpo	Hu-Hang-Jung	286.398
Peking-Suiyuan	Kin-Sui	490.493
Shihchiaochuang-Taiyuanfu	Cheng-Tai	242.950
Taokow-Chinghua	Tao-Ching	152.453
Kaifeng-Honanfu	Pienlo	185.000
Kirin-Changchun	Chi-Chang	127.669
Chuchow-Pinghsiang	Chu-Ping	90.500
Canton-Kowloon	Kuang-Chiu	143.296
Canton-Samshui	Kuang-San	49.923
Changchow-Amoy	Chang-Hsia	28.000

* See description in FAR EASTERN REVIEW, November, 1919.

† See description in FAR EASTERN REVIEW, November, 1919.



Map of Railways already Contracted for in China

This map is designed to show the relation of railroads already contracted for with those at present in operation in China. It must be pointed out that while the continuation of the line (the Lung-Hai) passing through Kaifeng eastwards, and shown as ending at Suchow, in Kiangsu Province, is not given on the map, it will probably go to some point on the Yangtze River. Originally it was designed that the terminal should be on the seacoast at Haichow, but surveys have shown that it would be better, if politically possible, to abandon that place and take the line southwards to the Yangtze to Nan Tungchow, or some port thereabouts. Tungchow is situated on deep water sufficient to float large ocean-going steamers, and naturally would form a very desirable terminal. To make Haichow possible as a port would require the expenditure of a great sum of money.

The Railways According to Provinces

The following is the measurement in kilometres of railway owned, classified by use and distributed by Provinces:—

Chihli Province Main Line, 1,437.790 km.; Branch Lines, 211.090 km.; Second Track, none; Loops, 212.891 km.; Sidings, 316.587 km.; Industrial Lines, 21.520 km. Total, 2,199.878 km.



Typical 15-metre span for repairs on the Peking-Hankow Railway, as erected in Ambrose Shops, U.S.A., of the United States Steel Products Company

Honan Province: Main Line, 905.707 km.; Branch Lines, 2.446 km.; Second Track, none; Loops, 94.598 km.; Sidings, 85.967 km.; Industrial Lines, 6.962 km. Total, 1,095.680 km.

Kiangsu Province: Main Line, 488.531 km.; Branch Lines, 16.093 km.; Second Track, 3.685 km.; Loops, 33.892 km.; Sidings, 97.092 km.; Industrial Lines, none. Total, 639.293 km.

Shantung Province: Main Line, 422.291 km.; Branch Lines, 72.130 km.; Second Track, none; Loops, 39.091 km.; Sidings, 50.678 km.; Industrial Lines, 4.941 km. Total, 589.131 km.

Shengking (Manchuria) Province: Main Line, 426.840 km.; Branch Lines, 91.967 km.; Second Track, none; Loops, 30.450 km.; Sidings, 79.437 km.; Industrial Lines, none. Total, 628.694 km.

Shansi Province: Main Line, 328.905 km.; Branch Lines, 19.568 km.; Second Track, none; Loops, 16.261 km.; Sidings, 27.739 km.; Industrial Lines, 5.009 km. Total, 427.482 km.

Anhwei Province: Main Line, 280.622 km.; Branch Lines, none; Second Track, none; Loops, 19.521 km.; Sidings, 23.367 km.; Industrial Lines, none. Total, 323.510 km.

Chekiang Province: Main Line, 203.115 km.; Branch Lines, 5.665 km.; Second Track, none; Loops, 19.988 km.; Sidings, 25.492 km.; Industrial Lines, none. Total, 254.260 km.

Kwangtung Province: Main Line, 192.220 km.; Branch Lines, none; Second Track, 18.025 km.; Loops, 11.619 km.; Sidings, 12.712 km.; Industrial Lines, none. Total, 234.576 km.

Hupei Province: Main Line, 170.793 km.; Branch Lines, none; Second Track, none; Loops, 30.475 km.; Sidings, 27.969 km.; Industrial Lines, 5.281 km. Total, 234.518 km.

Kirin (Manchuria) Province: Main Line, 127.669 km.; Branch Lines, none; Second Track, none; Loops, 5.890 km.; Sidings, 20.229 km.; Industrial Lines, none. Total, 153.788 km.

Hunan Province: Main Line, 56.300 km.; Branch Lines, none; Second Track, none; Loops, 2.370 km.; Sidings, .520 km.; Industrial Lines, none. Total, 59.190 km.

Kiangsi Province: Main Line, 34.200 km.; Branch Lines, none; Second Track, none; Loops, 6.390 km.; Sidings, 1.190 km.; Industrial Lines, none. Total, 41.780 km.

Fukien Province: Main Line, 28.000 km.; Branch Lines, none; Second Track, none; Loops, none; Sidings, 3.535 km.; Industrial Lines, none. Total, 31.535 km.

Grand Total: Main Line, 5,102.983 km.; Branch Lines, 418.959 km.; Second Track, 21.710 km.; Loops, 553.436 km.; Sidings, 772.514 km.; Industrial Lines, 43.713 km. Total, 6,913.315 km.

This property has been acquired partly by investment of Government funds and partly by means of loans. The amounts under each category as well as the changes during 1918 are shown as follow:—

Liability	Amount	Increase	Decrease
Permanent Government Investment	\$115,959,282.70	\$2,079,190.68	—
Additions to property through Surplus	28,186,795.51	3,967,487.08	—
Funded Debt Retired through Surplus	15,674,655.03	1,617,810.75	—
Total Government Equity	\$159,820,733.24	\$7,664,488.51	—
Shares	\$3,906,787.33	—	\$8,857.15
Mortgage bonds	264,156,938.41	—	2,550,832.22
Other Secured liabilities	14,183,051.66	—	368,098.16
Non-Government Equity	\$282,246,777.40	—	\$2,191,591.21

Sino-British Mining Enterprise for North Shansi

The coal fields of Tatung, in the north of Shansi Province, which we mentioned in an article on "Opening China's Great North West," in the November issue of the FAR EASTERN REVIEW, as of great potential value in the development of railway and industrial effort in this tremendous region, are to be investigated under an agreement between the Kailan Mining Administration and the Governor of Shansi Province, General Yen Hsi-san. The agreement was signed by Major W. S. Nathan, C.M.G., on behalf of the Kailan Mining Administration and provides for joint exploitation of the field with the Shansi Provincial Government.

This is an important step inasmuch as it opens the way for the introduction of modern mining methods in a region where there is believed to be an abundance of high quality coal and bordering on a territory which will be a great user of coal in the future when colonization plans are carried into effect and when the railway extensions across the Gobi are made.

At present coal is mined by natives in the hills near Tatung and is used on the railway and carried for sale on the Peking market. In order to give facilities for getting the coal from the mines to the market the Peking-Suiyuan Railway authorities built a branch line to Kaochuan. Coal is got out by the Chinese, on the slope and step system and is bituminous. It is of the middle Jurassic period and is said to be amongst the best of its kind in China, making good coke suitable for smelting.

The future of this new enterprise will be watched with great interest, especially as China is now on the verge of a great industrial era.

Railway Progress in China in 1919

Last Year shows Advancing Earnings and Many Administrative Improvements, including the Appointment of Foreign Technical Advisers to Effect Standardization of Rolling Stock, etc.

THE September number of THE FAR EASTERN REVIEW contained a summary of the Statistical Report issued by the Ministry of Communications covering the operations of the Government railways during the year 1917. In the course of that review, attention was called to the fact that the Ministry seemed to be making progress toward getting out its reports promptly and said "It will be interesting to see if the process of catching up with the calendar will be fast enough to bring out the report for 1918 before the end of the current year." The Ministry has answered this challenge by producing the report for 1918 not only before the end of the year 1919, but a good full month before the end. To be exact, a copy was delivered at our Peking office on the 27th of November. Thus within less than eleven months after the close of the fiscal year to which it refers, this report is in the hands of the public. As many of the lines do not close their books until about five months after the close of the year, the preparation of this considerable volume has been accomplished in less than six months. These results compare favorably with those in any foreign country, especially when it is taken into consideration that the press work has been done entirely by native printers. The latter consideration in itself is one of some moment, and the entire performance is a splendid illustration of what can be done in China, if to patience there be added perseverance, and to perseverance there be added a willingness to profit by past experience. The first report to cover a full year's operations was for the year 1915. It appeared two years and seven months after the close of 1915. The report for 1916 appeared two years and three months after the close of 1916. The report for 1917 appeared one year and seven months after the close of 1917, and now the 1918 report, circulated within eleven months after the close of that year, brings the series up-to-date and on time. To do this, the Ministry has brought out three reports during the calendar year 1919. This is a record feat

and one which reflects great credit upon the administration. If all branches of the Chinese Government service will do their work with the promptitude and the evident precision which marks the work of the statistical division of the Ministry of Communications, things will be in a fair way in China while some of us are still alive to behold it.

The general results for the year 1918 were given on page 783 of the December number of the FAR EASTERN REVIEW. For the sake of completeness and continuity some of them are repeated here.

	1918	1917	Increase.	Decrease.
Operating Revenues	\$77,652,152.95	\$63,873,703.67	\$13,778,449.28	—
Operating Expenses	34,322,615.12	30,040,564.50	4,282,050.62	—
Net Operating Revenues	43,329,537.83	33,833,139.17	9,496,398.66	—
Income Debits	11,033,562.00	13,303,440.24	—	\$2,269,878.24
Income Credits	1,209,143.74	1,100,496.79	108,646.95	—
Net Income Debits	9,824,418.26	12,202,943.45	—	2,378,525.19
Surplus for the year	\$33,505,119.57	\$21,630,195.72	\$11,874,923.85	—

In explanation and analysis of the results epitomized in this condensed statement the report contains 84 pages of "text," 40 "tables" and 9 colored or graphic diagrams. One of the most commendable features of the text is the apparent willingness to admit the unfavorable features of the situation as well as the favorable. This will do more to gain confidence in Chinese statistical reports than the publication of the report itself. Furthermore, it leaves the administration in a perfectly defensible position. If railway management were already perfect, there would be no excuse for wasting money in unifying accounts, statistics, and practice. But everyone knows that administration is not perfect, no more



Bridge over the Yellow River near Tsinanfu which carries the track of the line from Tientsin to Pukow. The bridge

in China than elsewhere, and the acknowledgement of faults, therefore, does not in any way imply an apology by the administration. Rather it is an earnest of improvements which are to be expected. Also, the disposition to claim credit for every lucky incident has been successfully resisted. A good evidence of this is to be found in the explanation given for the unusual increase in Operating Revenues, an increase of over 20 per cent. Says the report, page 2:

These results are abnormally favorable. The revenue for the year is larger by perhaps \$2,000,000 due to the fact that interruptions in service due to floods in 1917 left considerable traffic unmoved in 1917 which added to the business of 1918. The loss of this traffic in 1917 makes the contrast again more conspicuous. Exceedingly favorable weather in 1918 also enabled the several lines to realize all the possibilities of traffic during the year. Allowance should be made for these factors in gauging the prospects for the coming year and in calculating the normal increase in business. Nevertheless, the year gives a gratifying demonstration of the capacity of the lines composing the Government property and of the fundamentally sound conditions underlying business in the territory served.

And again on page 24:

These revenue figures contain \$5,789,737.84 for the carriage of Government passengers and goods—mostly military. This is an increase of \$2,832,143.44 in Government service over the year before. In addition there was an increase in revenue from service stores and from material for other Railways of \$254,675.79 and \$132,244.83 respectively. If these items be subtracted from the total increase in revenue, the gain from commercial sources is \$10,559,378.22. Of the \$77,652,152.95 gross revenues for the year, Government traffic of \$5,789,737.84, is not collected in cash but is cared for by book-keeping transfers between the lines and the Government. Similarly revenue from the carriage of service stores is a debit to the expenses and a credit to the revenue of the same line. Revenue from the haul of materials for other railways is credited to one line but is debited to another, so that the real cash transactions of the combined lines are not enhanced thereby. Combining these two items, \$1,533,176.37 and \$336,937.75 respectively with Government traffic revenue, above noted, and a total of

\$7,659,851.96 is in fact not collected by the railway in cash. This is not to be confused with services rendered by the railways to the Department of Posts for which only a nominal charge is assessed, nor for services rendered to the military by way of housing troops in wagons for which nothing is assessed. Subtracting these book-keeping transfers from the total revenue reported leaves \$69,992,300.99 commercial revenue compared with \$59,432,915.77 in 1917—yielding an increase of nearly 18 per cent.

Unfortunately, this gratifying evidence of the growth of railway service does not at the same time accurately measure the financial benefits which the Government derived from the ownership of these railways. Conditions over which this Ministry had no control made it seem prudent to accept upon certain lines bank notes of depreciated value in payment of services rendered. Just what allowance should be made in the nominal total revenue reported above, is difficult to estimate.

However, according to page 46 of the report the discount on depreciated currency was \$1,200,000 less than during the preceding year—the 1918 figure being \$965,744.85. Of course, as the report admits "There remained in the possession of the lines at the close of the year a considerable amount" of such notes, upon which the losses will be recorded during the year in which the loss occurs. But on pages 49 and 55, depreciated notes on hand amounted to \$2,000,000 among cash and \$6,940,000 compared with \$11,000,000 in cash and over \$1,000,000 in special funds at the end of 1917. On page 20 of the report it is stated that some \$12,400,000 of depreciated notes were disposed of during the year in the purchase at par of Government bonds. It thus appears that practically all of such notes on hand at the beginning of 1918 were disposed of at par for bonds, and that the notes on hand at the end of the year, plus those disposed of at a discount, as evidenced by discount on depreciated currency, approximates the amount collected during the year. Assuming a discount of fifty per cent. on those disposed of yields nearly \$2,000,000 par value, this added to the \$8,940,000 in cash and special funds shows that practically \$11,000,000 were collected during the year. Again using the discount of 50 per cent., we may say that \$5,500,000 should be deducted from the returns of the year in order to put them in "hard cash" terms.



is 4,180 feet long, and is built on eleven piers. A full description appeared in THE FAR EASTERN REVIEW of October, 1912

Even this leaves a splendid increase of real earnings over the year before, assuming that the 1917 figures represent nothing but silver—which was not the case by any means. In fact 1918 saw considerable progress toward restricting the use of inconvertible notes on the government lines.



Typical 30-metre span for repairs on the Peking-Hankow Railway, as erected in Ambrose Shops, U.S.A., of the United States Steel Products Company

Operating expenses are analyzed in fifteen pages of text, a condensation of which may be given as follows:

Department.	Expense.		Increase.	
	1918	1917	Total.	Per cent.
General	\$6,286,749.01	\$5,644,587.63	\$642,161.38	11
Traffic	4,302,860.07	4,025,087.46	277,772.61	6
Running	8,268,194.22	6,671,754.47	1,596,439.75	24
Maintenance of Equipment	6,917,142.38	6,308,790.08	608,352.30	10
Maintenance of Way	8,262,909.25	7,236,697.53	1,026,211.72	14
Interchange of Rolling Stock	284,760.19	153,647.33	131,112.86	85
Total Operating Expenses	\$34,322,615.12	\$30,040,564.50	\$4,282,050.62	14

The increase under General is evenly divided between the two parts, Administration and Special. The increase under Administration is \$321,000. Of this \$105,000 came from the Peking-Suiyuan line—\$85,000 of which occurred under the head "Direction." The Peking-Hankow with an increase of \$105,000, the Chuchow-Pinghsiang with an increase of \$43,000, the Peking-Mukden with \$35,000 and the Kirin-Changchun with \$22,000 make up most of the remainder. On the Chuchow-Pinghsiang "Loss on Stores" (due to military disorders) as well as "Direction" cause the increase. On both the Peking-Suiyuan and the Chuchow-Pinghsiang "Direction" expenses increased nearly fifty per cent.

Traffic expenses increased upon all lines nearly \$278,000 and show the smallest increase of any department. This is due to the cutting down of agency commissions on the Tientsin-Pukow to the extent of nearly \$297,900. Except for this the increase under traffic would be about 13 per cent. The large increases are upon the Peking-Hankow with \$170,000, Shanghai-Nanking with \$87,000, Kirin-Changchun with \$79,000, Peking-Mukden, \$40,000, Shanghai-Hangchow-Ningpo, \$40,000 and the Peking-Suiyuan, \$32,000. If it were not for the circumstance above mentioned, the Tientsin-Pukow would show an increase of \$100,000 but as it is this line shows a decrease of \$196,000.

Running expenses increased \$1,596,000—in round numbers—or 24 per cent. When it is remembered that ton kilometres increased no more than 24 per cent. and that passenger kilometres increased only 9 per cent., this increase in running expense is seen to be out of proportion.

Considering the subject by sub-divisions, locomotive expense, that is fuel and wages of enginemen, principally made up \$1,408,000 of the increase. The increase in the price of coal upon the Shanghai-Nanking, the Shanghai-Hangchow-Ningpo and the Canton-Kowloon will be found to explain in large part the increase in this head beyond what would be expected from the increase in traffic hauled.

The expense of maintaining the equipment of the government lines in 1918 was \$6,308,790.08, which is an increase over 1917 of \$608,000, in round numbers. The total includes \$1,777,421.89 depreciation charges, which is some \$60,000 less than similar charges in 1917.

Maintenance of way expense in 1918 amounted to \$7,236,000, in round numbers. This is an increase of \$1,026,000, of 14 per cent. over the year before. The lines with large increases are the Tientsin-Pukow with \$564,000, the Shanghai-Nanking with \$105,000, the Peking-Mukden with \$103,000, Kaifeng-Honan, \$97,000, Kirin-Changchun, \$97,000, Peking-Hankow, \$90,000. The Shanghai-Hangchow-Ningpo shows a decrease of \$55,000. These increases are quite generally due to replacement of sleepers. This is true of the Tientsin-Pukow, Kirin-Changchun, Kaifeng-Honan, and Peking-Mukden. The Tientsin-Pukow also had a large increase under extraordinary, due to floods of the year before, as did also the Peking-Hankow. The Peking-Hankow had a considerable decrease under sleepers, but this is partly overcome by large increases in superintendence, watchmen, station buildings and staff quarters. The Shanghai-Nanking shows its increases under station buildings and maintenance of wharves. The Shanghai-Hangchow-Ningpo shows its decrease principally under sleepers.

The increase under Interchange of Rolling Stock was entirely upon the Tientsin-Pukow.

Not only does every department of expense show an increase over 1917, but every line considered separately shows a similar increase—even the lines which show decreases in business. The principal increases by lines, are on the Peking-Hankow, \$976,000, the Tientsin-Pukow, \$956,000, the Shanghai-Nanking, \$766,000, Kirin-Changchun, \$321,000, Peking-Suiyuan \$311,000 and Shanghai-Hangchow-Ningpo, \$305,000.

With an increase of Operating Revenues of 22 per cent. and in Operating Expenses of only 14 per cent., one is prepared for a considerable improvement in the already low operating percentage of "Ratio." By lines this was as follows:

OPERATING PERCENTAGE BY LINES, 1918 AND 1917.

Name of Line.				1918	1917
1.	Peking-Hankow	...	...	33.1	37.4
2.	Peking-Mukden	...	...	33.5	38.4
3.	Shihchiachuang-Taiyuan (Cheng-Tai)	...	...	41.7	50.8
4.	Taokow-Chinghua	...	...	44.9	41.3
5.	Tientsin-Pukow	...	...	50.2	50.9
6.	Kaifeng-Honan	...	...	55.4	46.3
7.	Kirin-Changchun	...	...	60.5	69.7
8.	Shanghai-Nanking	...	...	61.1	52.8
9.	Peking-Suiyuan	...	...	65.1	68.5
10.	Shanghai-Hangchow-Ningpo	...	...	86.2	81.2
11.	Chuchow-Pinghsiang	...	...	99.6	82.3
12.	Canton-Kowloon	...	...	112.9	104.6
13.	Changchow-Amoy	...	...	187.5	159.5
	Chinese Government Railways	...	...	44.2	47.0

The performance of the combined lines is markedly better than in 1917. This is due almost wholly to the improved records on the Peking-Hankow and the Peking-Mukden, both of which show a very low percentage. The improvement upon the Cheng-Tai and the Kirin-Changchun are equally satisfactory but the volume of business upon those lines is not sufficient to effect the general average to any great extent. The poorer record upon the Kaifeng-Honan, the Shanghai-Nanking and the Shanghai-Hangchow-Ningpo is a matter of some concern and in the case of the latter two lines was due in considerable part to the exorbitant prices paid for coal. The Peking-Suiyuan shows a better figure than in 1917, but is still behind its record of earlier years.

The Peking-Hankow holds its customary place at the head of the list, but it is so closely pressed by the Peking-Mukden that if Peking-Hankow rates were reduced to Peking-Mukden levels, their positions might be reversed. The effect of rate levels, has a pronounced effect upon operating percentage. A high rate is as effective as low expense in keeping the percentage low, provided, of course, that the rates still permit a full flow of traffic.

The increase in net operating revenue, given above, is not far short of 30 per cent. For the combined lines it is equivalent to 10.4 per cent. upon all investment assets, compared with 8.2 per cent. in 1917. Net operating revenues per kilometre of line amounted to \$7,921 silver. This is especially significant, now that the silver dollar is worth as much or more than the gold dollar, when comparison is made with similar earnings in other countries. Pre-war earnings in such countries as England, Germany, and the United States were respectively \$6,655, \$4,150 and \$2,442 per kilometre of line. While in Australia, Canada, India and Japan, they were respectively, \$1,076, \$1,579, \$1,784, and \$3,413 per kilometre of line. Even if one were to assume the old 2 for 1 rate of exchange the Chinese Government railways are seen to be among the most profitable in the world.

The largest income debt item is interest on funded debt. It amounted to \$8,547,500.54 compared with \$10,555,727.51 in 1917. This is a decrease of \$1,508,226.97—due in part to a reduction in funded debt on certain lines, but due principally to the more favorable rates of exchange. Practically all interest on funded debt must be paid in foreign money which is on a gold basis. The increasing price of silver, which is the Chinese standard, therefore makes the purchase of the gold for interest payments correspondingly less. In effect, the favorable rates of exchange bring about a reduction in interest rates. The amount paid in 1918 is 3.07 per cent. on the

funded debt and other secured indebtedness outstanding at the end of the year.

If all interest, rents, taxes, and similar income debit items were to be totalled, it would be found that for every dollar of such debits there were over four dollars of net revenues and other income credits to meet it.

The credit balance for the year—often called surplus for the year—was \$33,505,119.57. It would permit the payment of interest charges a second and a third time and still leave a balance much larger than the balance in 1915—the first year under the uniform classification of accounts.

The Government owns a considerable equity in these properties. What profit do they pay upon this investment? On December 31, 1918, this permanent Government investment of the reporting lines stood on the books at \$114,169,300. At five per cent., the annual interest charge would be \$5,708,465. Thus after allowing for this reasonable return upon permanent Government investment, there would remain out of the balance of \$33,505,120 a clear profit of \$27,796,655. Or if it be put the other way, the balance stated above is 29 per cent. upon permanent Government investment.

Under such encouragement it is not unexpected that the Government is rapidly increasing its investment in these lines of railway. It is accomplishing this in several ways—by the repayment of loans, by additions to the property out of earnings, and by choosing to regard as permanent investment sums which hitherto had been considered as temporary advances only. The Government now owns over one-third of the total investment in these lines. The amount and the changes during the year are shown in the following statement taken from page 6 of the report :—

Liability.	Amount.	Increase.	Decrease.
Permanent Government Investment	\$115,959,282.70	\$2,079,190.68	—
Additions to property through Surplus	28,186,795.51	3,967,487.08	—
Funded Debt Retired through Surplus	15,674,655.03	1,617,810.75	—
Total Government Equity	\$159,820,733.24	\$7,664,488.51	—
Shares	\$3,906,787.33	—	\$8,857.15
Mortgage bonds	264,156,938.41	—	2,550,832.22
Other Secured liabilities	14,183,051.66	\$368,098.16	—
Non-Government Equity	\$282,246,777.40	—	\$2,191,591.21

A further useful and interesting feature of the report is the comparison given in the tables with the results of previous years, beginning in 1915 when uniform statistics were first available. From one of these we learn that passen-



A Breach made by Floods in the Hsinloho Bridge on the Peking-Hankow Railway

ger kilometres have increased during the four years from 1,900,000,000 to 2,300,000,000 or something over 20 per cent. This, of course, is only a moderate increase. But from another table we find that ton kilometres from 2,250,000,000 to 3,425,000,000 or over 50 per cent. This is a rate of increase fully equal to that in the United States during that unusual decade of expansion between 1900 and 1910. When it is remembered that this increase has taken place during years when it was impossible to purchase new equipment, and that the carrying capacity of equipment during this period has actually increased less than 4 per cent., one begins to appreciate the enterprise and energy of operating officials in meeting the emergency and to speculate on what the increase in goods traffic might have been, had there been no shortage of wagons.

Speaking of equipment, the report shows that seven new locomotives were added on the Peking-Mukden and Peking-Suiyuan lines during 1918 and that 200 goods wagons, leased under the notorious Hsu Shih-ying agreement, were received by the Tientsin-Pukow. The performances of all of these forms of equipment were much in excess of the figures of the year before.

The report for 1918 is properly reviewed in an estimate of the year 1919, not only because of the fact that it appears in the latter year, but also because it furnishes the background against which any picture of 1919 must be sketched.

What of revenues in 1919? These may be approximated in several ways. The first of these is to arrive at a normal annual increment. This may be fixed upon by comparing the revenues of previous years, as follows:

	Revenue.	Increase.
1915	\$57,063,000	—
1916	62,762,000	\$5,699,000
1917	63,874,000	1,112,000
1918	77,652,000	13,778,000

From the above it is quite apparent that as yet there is no "normal" annual increase. The fluctuations are too violent. As has been stated before, the floods in 1917 reduced that year's earnings far below what they would have been otherwise, and held over traffic which boosted the 1918 figures far above what they should have been. Probably an addition of \$3,000,000 to the 1917 figures and a subtraction of that amount from the 1918 results would put the matter about right. Even then, the results would leave the increase of 1918 over 1917 nearly \$8,000,000. However considering the other peculiarly favorable conditions in 1918, this appears quite reasonable. By reducing the 1918 revenues to a normal of about \$74,500,000 we find that the increase of the three years since 1915 is about \$17,500,000 or a little less than \$6,000,000 per year. If this amount be added to the normal 1918 figure of \$74,500,000 we arrive at about \$80,400,000 as the estimated revenue for 1919—unless there are some unusual factors to take into consideration. But 1919 seems to have been quite a usual year. At least, the Peking-Hankow has been broken by high water several weeks at a time, there has been considerable military traffic, several of the smaller lines in the south have almost had to suspend from military causes, there have been local droughts, there was a cholera scare for a time, but there have been no calamities, the crop on the whole has been good, and trade has gone its way relatively unmolested. Yes, 1919 has been quite normal.

An innovation which the Railway Department of the Ministry of Communications has inaugurated during the year permits of a much closer approximation of results than has been possible hitherto. Every ten days it gives out an approximate return of traffic. This is in itself something of an estimate, but it is made for each individual line, and based

upon data which is probably at least 85 per cent. actual. The last of these made public at the time these lines were written covered the nine months ending September 30. It included two lines, the Wuchang-Changsha and the Shihpingkai-Chengchiatun, which were not included in the 1918 statement of earnings. But if these be eliminated from the totals, the operating revenues at the end of September aggregated \$56,789,000—or practically the same as the revenue for the entire year of 1915.

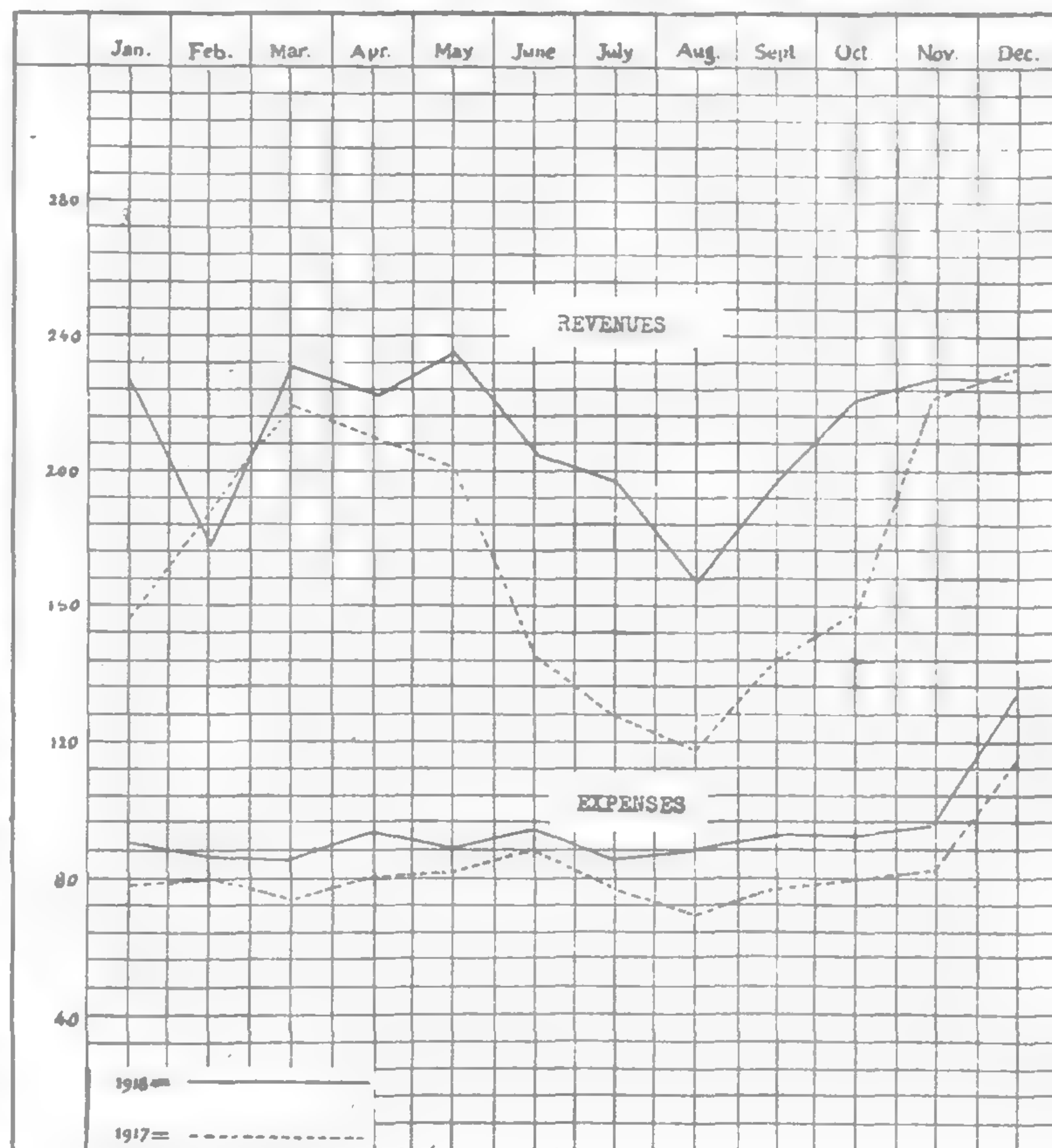
Now the remaining months of the year are the most important of all,* hence any great fluctuation during October, November and December will be fatal to any estimates for the year. But according to all reports, everything was going steady when this was written, and no large fluctuations are looked for. By taking the percentage which the earnings up to September 30 bore to the total for the year during previous years and applying that to the \$56,789,000 above, we may arrive at a probable revenue figure for the year.

Year	Revenue earned up to Sept. 30	Revenue for the Year	Per cent. earned by Sept. 30
1915	\$39,817,000	\$57,063,000	69
1916	44,686,000	62,762,000	71
1917	45,039,000	63,874,000	70
1918	56,914,000	77,652,000	73
Four years ...	\$186,456,000	\$261,351,000	71

Calculated upon this basis, earnings for the year 1919 are estimated at \$79,984,000—practically \$80,000,000. The increase over 1918 is, therefore, only about \$2,500,000. After the tremendous increase of 1918 over 1917 this may be somewhat disappointing until there is recalled the facts surrounding the increase in 1918. When these are considered, and we go back to the normal figures for 1918 for a comparison (\$74,500,000), we find that the regular normal increase of between \$5,000,000 and \$6,000,000 is right on hand as usual.

However, the particular lines to "fall down" in revenue this year are not the lines whose earnings in 1918 were in-

*Average Daily Operating Revenues and Expenses, by Months, Chinese Government Railways, 1917 and 1918



lated by tonnage left over from 1917—that is, the Peking-Hankow and the Tientsin-Pukow. Both of these lines show a substantial increase to date over the corresponding months of 1918. The delinquents are the Peking-Mukden and the Cheng-Tai. Yet the floods are responsible, for they caused an unusual movement of grain and other foodstuffs into Chihli to take the place of supplies destroyed. This movement is absent in 1919, which accounts for the decrease on the Peking-Mukden particularly.



A Bridge over the Niang Tzi-kuan, on the line to Taiyuanfu

In view of the high earnings during 1918 and the needs of a developing traffic, budget allowances for expenses in 1919 are higher than those for 1918. In addition the prices of materials, which have been steadily mounting during the war, will have full effect during 1919, whereas in 1918 a considerable portion of the supplies consumed were those which had been purchased in earlier years before the present high levels had been attained. Although the attention of managers has been closely fixed upon the necessity of keeping expenses down to a minimum compatible with service requirements. Operating expenses in 1919 will probably exceed those of 1918 by an amount equal to the increase in operating revenues. Hence, net operating revenues will be no larger in 1919 than they were in 1918, in all probability. This is universal experience. A year of tremendous traffic scales up the standard of expense which is rarely if ever scaled down. However, the rate of exchange continues to make the cost of interest payments, which are made in gold, cheaper in terms of Chinese currency. This, together with the decreasing amount of mortgage bonds outstanding will probably result in a further decrease in interest charges by nearly a million dollars. Hence in the final balance for the year, we shall find probably a million dollars more, than in 1918—or about \$34,500,000.

The final balance for the year will be much better than that for 1918 in another respect—it will not contain nearly so large a proportion of inconvertible notes. During the year 1918 there was little restriction to their use upon the four big lines—the Peking-Mukden, the Peking-Hankow, the Tientsin-Pukow, and the Peking-Suiyuan these lines received practically all of their passenger revenue in these notes, as well as certain other revenues. During 1919 the Peking-Mukden has collected all of its revenue in silver, the Tientsin-Pukow has done similarly since April 25, and since July 16 the Peking-Hankow and Peking-Suiyuan lines have reduced

the acceptance of notes to local fares and local baggage charges only.

Up to the present, reviewers of railway progress have invariably apologized for the state of railway administration in China by diverting attention to the fact that in the face of all the discouraging conditions, such as military operations, demoralized currency, banditry, plagues and inefficiency of administration, railway earnings were steadily growing—indicating a fundamentally healthy condition of the Chinese people. The year 1919 marks a change, which let us hope is permanent. It is the increase in earnings, if anything, which would be particularly criticized this year. But that is quite satisfactory, while the signs of progress in administration are very clear.

On the Peking-Suiyuan line a few miles of actual construction has been effected. Provisions have been agreed upon for an extension of the Taokow-Chinghuachen line southward to the Yellow River, and arrangements have been made for a resumption of work on the Canton-Hankow line. The Peking-Mukden, Peking-Hankow, and the Taokow-Chinghuachen lines have made comparatively large purchases of locomotives and goods wagons, some of which have arrived.

Early in the year, the Standing Committee of the accounting officers formulated a system of accounts and drew up standard forms to be used in all the stations upon the Chinese Government railways. By the use of these forms and uniform rules, it will be possible to transfer station masters and station clerks from one line to another without putting them through a preliminary course of instructions. It will permit of supervision of the management of the different lines, without loss of time. And what is more important, it will permit of supervision of the management of the different lines, by inspectors from the Ministry, which at present is impossible because each line has a different system of its own. This work is fundamental of course to the standardization of audit procedure in head offices, which is desirable in order to permit of efficient supervision from the Ministry. Due to the tedious work of correcting proofs of the forms and rules governing, and to the necessity for translation from English, in which the system was drawn, into Chinese and French, this system of station accounts has not yet been promulgated. But it is only a matter of a few weeks before this will be done. The next subjects to be considered by the accountants are the standardizing of store accounts and the accounts of engineers on construction. Sub-committees have been formed which are expected to report during the coming year.

The Traffic Managers of the Government railways also took a very important step toward welding the several lines into a real Government system—two steps, in fact. The first of these was to adopt rules for the general interchange of goods wagons. For some time, the Ministry of Communications had been urging the various lines to compose their divergent views sufficiently to permit of this, but had always encountered such a statement of difficulties to be met with that no action was taken. Several of the lines had made arrangements with their immediate connections for a limited amount of interchange, but if the shipments were billed to more than a hundred miles, say, beyond the junction point, transshipment was required. The present arrangement falls far short of effecting an actual “pool” of goods wagons, and, therefore, defeats in a degree the Ministry’s aim to eliminate all unproductive empty haul as well as its desire to transfer wagon supplies at will according to the fluctuating demands for space upon the different lines. But the new rules do eliminate transfer at junction points, thus cutting down wagon detention, and the expense to shippers of the labor and damage due to transfers. Furthermore, the rules will reduce a certain amount of empty haul, for they permit of the equalization of wagon supply by the delivery of equivalent

capacity rather than of the particular wagon, provided that no wagon is to remain away from its "home" line more than 12 days. The interchange records are to be kept by the Clearing House in the Ministry of Communications, and settlements between the different lines will be effected through the same bureau.

In a supplementary session, the Traffic Managers drew up a uniform classification of goods to be followed for through traffic purposes. This is a work of considerable moment, for up to the present, each line had devised its own classification. It is understood that the new classification is much further refined and more complete than any of the former classifications. Whereas no line in the past had recognized more than five hundred commodities in its classification, the through classification lists at least fifteen hundred. In

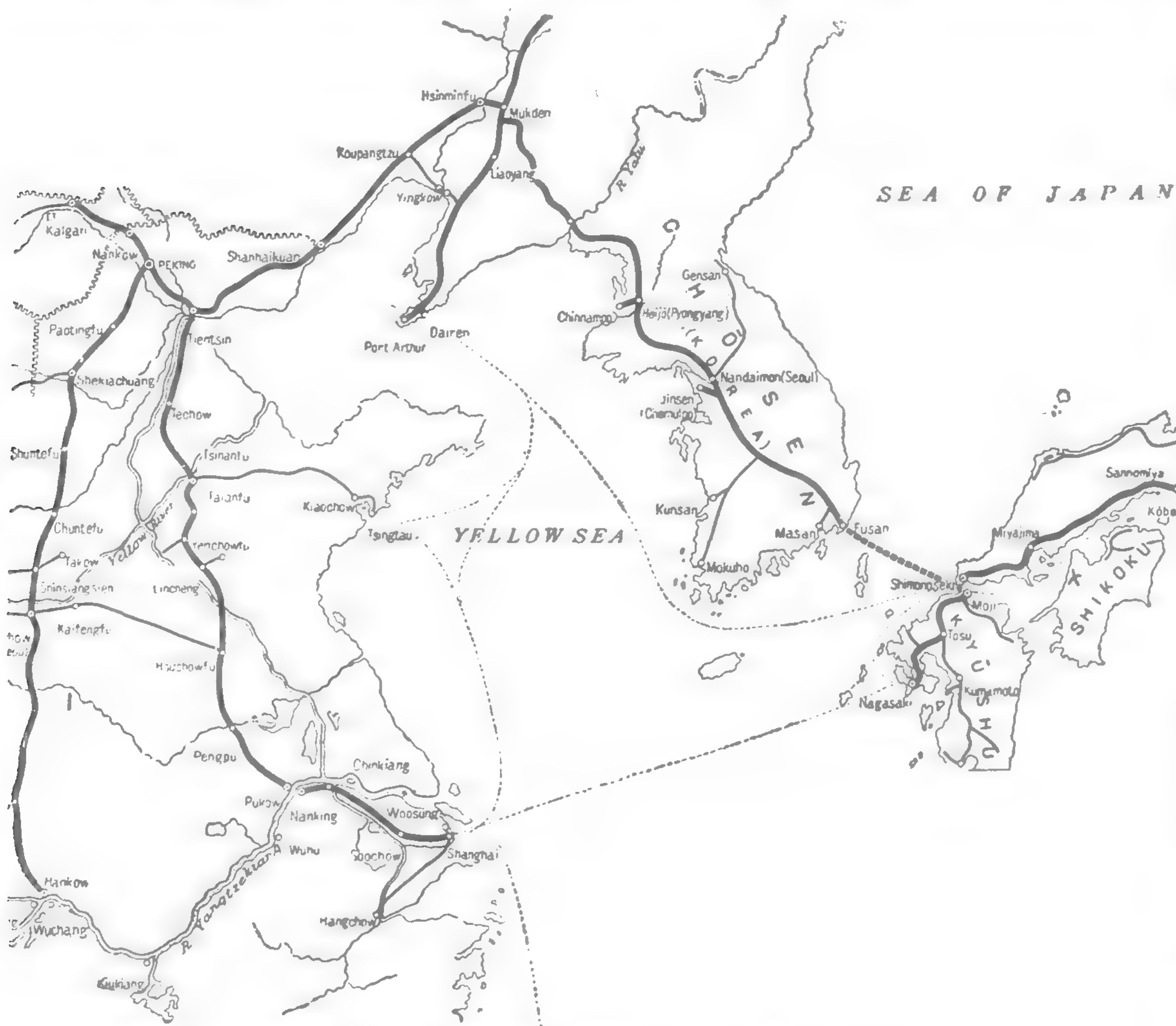
servant along with the cargo to pay *likin* charges and to protect the shipment from theft. But ways and means will be found in time to avoid this, after the preliminary work has been done. For example, on the Shanghai-Nanking line at present, there are two tariffs offered to the public, one for shipment at railway risk and the other for shipment at owner's risk. Naturally where the railway assumes the entire risk, it charges a higher rate. But the public has found the service upon that line to be so reliable and free from pilferers, that practically all the traffic now moves at owners' risk. No doubt the time will come soon when this can be done in other parts of China. Also, several of the lines have arrangements with the *likin* authorities whereby they pay a lump sum in lieu of the *likin* tax upon the goods which they carry. This sum is in effect added to the rates charged, but like any indirect tax, is not noticed, and traffic is stimulated by the freedom from *likin* interference.

This doubtless can be effected in the case of through traffic. Only when it is possible to ship a crate of goods from one point in China to any other point within its borders by the mere offering of it, with the necessary freight charges, at the point of origin, will China have a satisfactory railway service. And it is this end toward which two long steps have been taken in 1919.

One of the most serious obstacles to the unrestricted through shipment of goods and the common use of goods wagons, is the prevalence of so many different designs of wagons, each necessitating different standards of repair, and made up of parts which are entirely different in form from similar parts of other wagons. This makes it necessary to keep a wagon close to its "home" line, in order that it may be repaired. It would be possible to keep duplicate sets of repair parts for each type of wagon upon the Government lines at each repair station. But this would necessitate a

very heavy investment in such stores. Still it is feasible and is just what American railways have done to a considerable extent. But it is well known that the use of varying types reduces the efficiency of workmen in making repairs, especially the quality of the work done in repair. Hence to date, this has been considered an insuperable objection to wide interchange of rolling stock.

In order to correct this situation if possible, the Ministry of Communications has constituted a Commission on Railway Technics, which has been studying the situation for perhaps two years. This Commission has prepared designs for goods wagons which will be submitted to the mechanical officials of the several lines for criticism and adoption at an early date. To assist in making this standard as practicable as possible and to insure that no interest is denied full consideration a group of technical advisers has been engaged abroad, and these gentlemen have arrived in Peking. One of these, Mr.



Map showing Through Railway Route between China and Japan

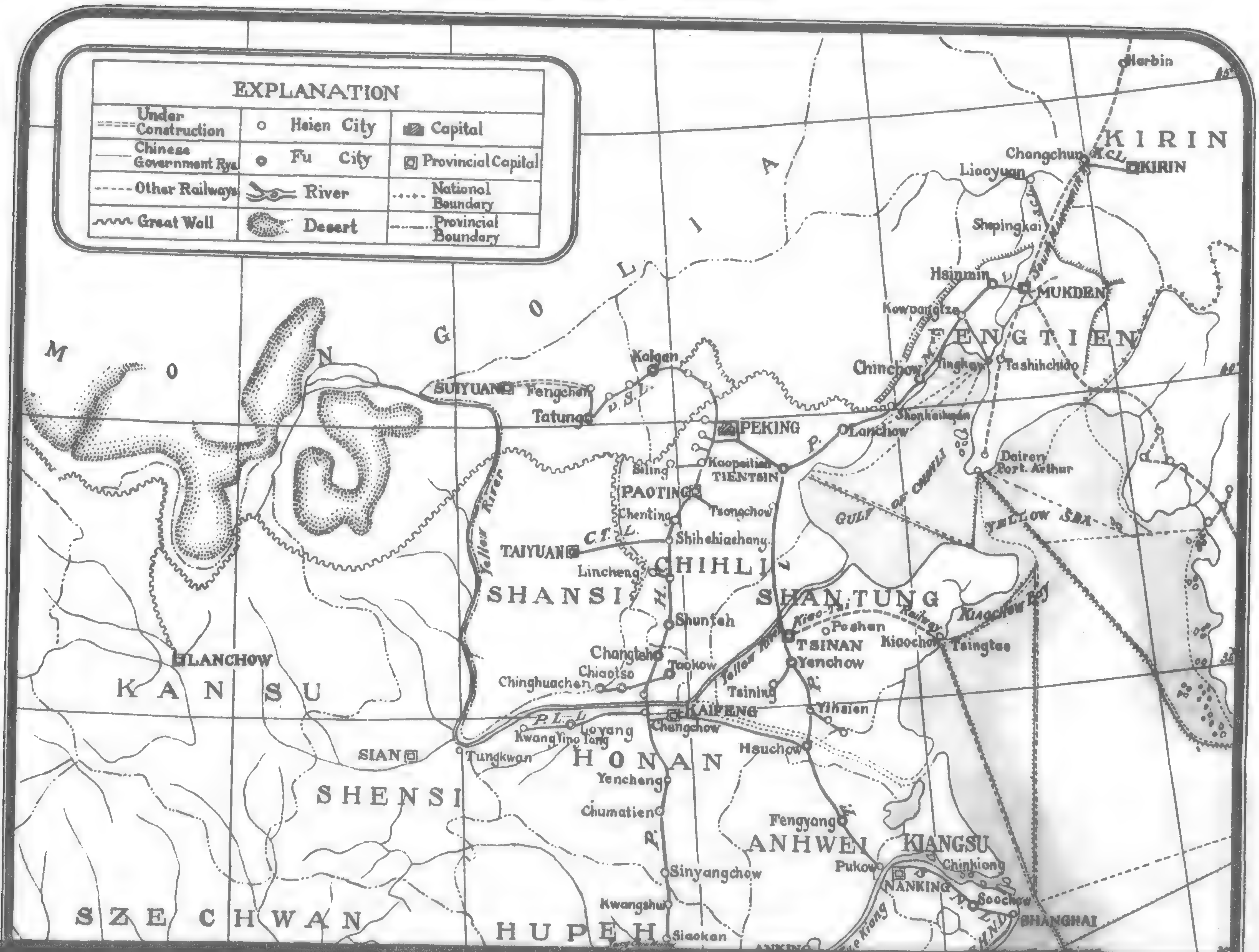
America, under private ownership, the work of harmonizing the classifications made by individual lines was attempted so late that to date it has not been accomplished. Although a great deal has been done, three major classifications remain, and practical men have almost despaired of finally reducing these three to one. China is to be congratulated that the diverse private interests upon her railways have been brought together for the common good at this early stage of her railway history.

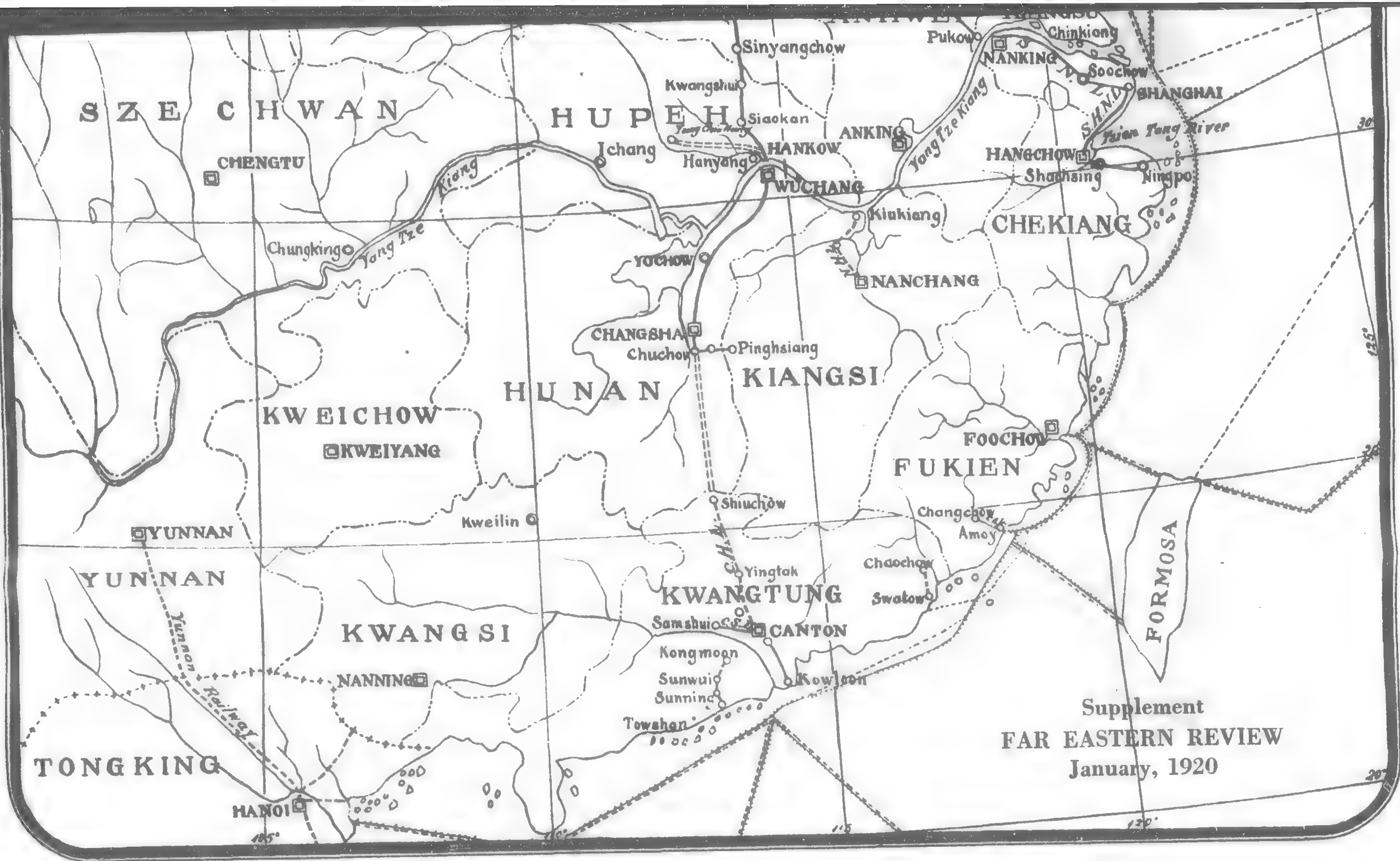
It is understood that plans are being made for the through-billing of goods beginning in 1921. That is, if one has a shipment at Kalgan destined to Pukow, he may load it upon a wagon at Kalgan, pay the freight charges for the entire trip in advance, and have the wagon moved direct from Kalgan to Pukow. This is the practice in all other countries having a standard gauge, but has not been possible in China. It will probably be necessary for some time yet to send a

MAP OF CHINESE GOVERNMENT RAILWAYS

PREPARED BY THE DEPARTMENT OF RAILWAYS

MINISTRY OF COMMUNICATIONS.





T. R. Johnson, is an engineer of note, with long experience upon the railways of Australia and England. Another, Mr. Frank H. Clark, was for many years, General Superintendent of Motive Power upon the Baltimore and Ohio, the pioneer railway of America. Monsieur Taton, a professor in the Sorbonne, and a mechanical engineer of note will bring to the Commission French experience. Dr. Hirai, at present Adviser to the Ministry of Communications, will bring Japanese experience.

While no official announcement has been made of plans or intentions, the common talk in Government service is that not only will rolling stock, but also signalling, roadway structures, and similar features of the service come under the purview of the Railway Technics Commission and its Advisers, to the end that the entire railway service shall be made of one standard. The procedure followed will be similar to that adopted in standardizing the accounts. That is, representatives from the different lines will meet with representatives of the Ministry and act as a legislative body. The Advisers will sit with these members and out of their experience and skill assist in reconciling the points of difference. Naturally, there will be many of these, and considerable compromise will probably result. The final conclusions will then be laid before the Minister for approval or disapproval. If approved, they become regulations, with much the same force as law.

No account of the year would be complete which did not mention the heated discussion during the early months upon the subject of "Unification." Many insisted upon using the term "Internationalization," and the emphasis upon this phase did more than any other part of the discussion to put the subject into the discard. Briefly the informal proposal was to invite the Consortium financiers to appoint a board of technical experts to assist the Ministry of Communications in administering the railways of China, provided that at the same time the Consortium group should furnish the funds and their governments should lend them sufficient political support to redeem the lines of railway now under complete foreign control, such as the Chinese Eastern, The South Manchuria, the Shantung, and the Yunnan lines. Two aims were in the minds of the promoters of the idea, (1) the recovery of undisputed control over the regions served by these lines, and (2) the complete amalgamation of all the existing lines together with lines yet to be built into a well integrated system. It was felt that the commercial future of China would be so much more attractive to the commercial nations under such conditions, that there would be some hope of securing their support to the program, which would be so advantageous to China politically. However, interests who were particularly interested in defeating China's political aspirations succeeded in making a considerable group possessing power and influence believe that it was merely a cleverly concocted scheme to wrest administration from Chinese officials, and the Government failed to adopt any positive attitude upon the question. Very soon after, came the stunning news that the Peace Conference had completely ignored all of China's claims for consideration, and the sentiment quickly arose that no administrative power of any sort is safe in any but purely Chinese hands. But there was doubtless a quickening of the feeling that China herself must make greater progress along the path of internal improvement, if she is to preserve any part of her national heritage. The presence of the Technical Advisers is an indication that China herself will push "unification" work, and thereby eliminate any further excuse for foreign interference. If this conclusion be correct, the "unification movement" has served a very useful purpose regardless of the personal animosities created, and the disappointment which many well-wishers of China feel over its apparently fruitless ending.

Scheme of Motor Highways, Canal and River Dredging for Shantung Province

General Chou Yin-kwang, the progressive Civil Governor of Shantung Province, has before the Provincial Assembly of Shantung Province a comprehensive scheme for motor highways, and a great dredging proposition calculated to give Tsinanfu, the Capital of the Province, direct connexion with the sea. The latter is the improvement of the Siao-chingho, an old canal, by dredging, widening, etc., to enable it to give navigating facilities for small steamers. It is interesting to note that the scheme was once a favorite one with Japanese, who, during the time of the German occupation of Tsingtao, desired to have a port at Lungkow and direct communication with Tsinan as a means of giving them facilities for developing from Dalny an economic footing in the Province. In the FAR EASTERN REVIEW of November, 1914, Mr. George Bronson Rea went into this question in some detail, and estimated that the cost of making the waterway fit for navigation by vessels having a maximum displacement of 1,500 tons and a draft of 20 feet and providing locks, and port facilities at the mouth, would be something like \$15,000,000 silver dollars, if the excavation is done by native labor. By modern machinery, dredgers, etc., he estimated that the price would be reduced—as well as the time of construction—to something like \$10,800,000.

Whereas this plan was advocated by the Japanese to suit their own economic purposes, the Chinese are now planning to go ahead with the enterprise to meet their own needs, and surveys have already been completed. In a later issue we will go into the matter in more detail.

So far as motor highways are concerned General Chu contemplates linking up all the principal district and other cities, and looks forward to being able within three years' to ride in an automobile through 107 districts in a couple of days. His scheme is to build a properly constructed main road between one district and another and to connect up important cities with branch roads.

A Bureau for the undertaking of this work is now being formed, and when the Provincial Assembly approves the scheme and passes the necessary appropriation surveys will be undertaken and construction work commenced.

Already the Governor is having the streets in Tsinanfu widened and macadamized, and a new road is being built round the city. Adjacent old roads are about to be repaired or rebuilt, and where necessary new ones will be constructed.

He also intends to have the Yellow River in Shantung attended to and dredged where possible. One of his plans is to have a port developed at Lukow, on the Yellow River, near the great steel bridge which carries the railway from Tsinanfu to Tientsin and Peking. At this spot—which is connected by a spur to the main railroad—a large junk traffic is already handled. The scheme is to deepen the river and establish the necessary improvements to make it a center for small steamboat traffic. The Yellow River is a big problem, as is also the improvement of the Siao-chingho, but Governor Chu is confident that the wherewithal can be found to undertake the work that is necessary. The Siao-chingho will have attention before the Yellow River, and work upon it will, he hopes, be started simultaneously with the building of a co-ordinated system of motor highways.

[See under "Engineering, Financial, Industrial and Commercial News" for references to other motor road schemes in China.]

Mr. Wang Ching-hui, who is one of the early revolutionists, and is famous first, for attempting to assassinate the old Prince Regent, second for having survived the horrors of Manchu imprisonment, and third for resisting all offers of office under the Republic, is busy lecturing his countrymen in South China on the necessity and importance of industrial development. He claims that industrial development will solve the pressing political and economic situation. He advocates that foreign assistance be secured in the shape of machinery and productive commodities rather than in loans. The latter are mostly squandered, he says, while machinery can be used for the profitable development of private and public enterprises.

Peking-Urga Railway Project Revived

ACCORDING to statements made in a responsible quarter in Peking the Government has determined upon an extension of the Peking-Suiyuan Railway from its present terminus at Fengchen to Urga, the capital of Mongolia. Surveys are to be begun in the spring and a Presidential Mandate is expected shortly appointing General Ting Shih-yuan Director of the Peking-Suiyuan-Urga Railway. General Ting is at present director of the Peking-Suiyuan line, a description of which appeared in the FAR EASTERN REVIEW, November, 1919.

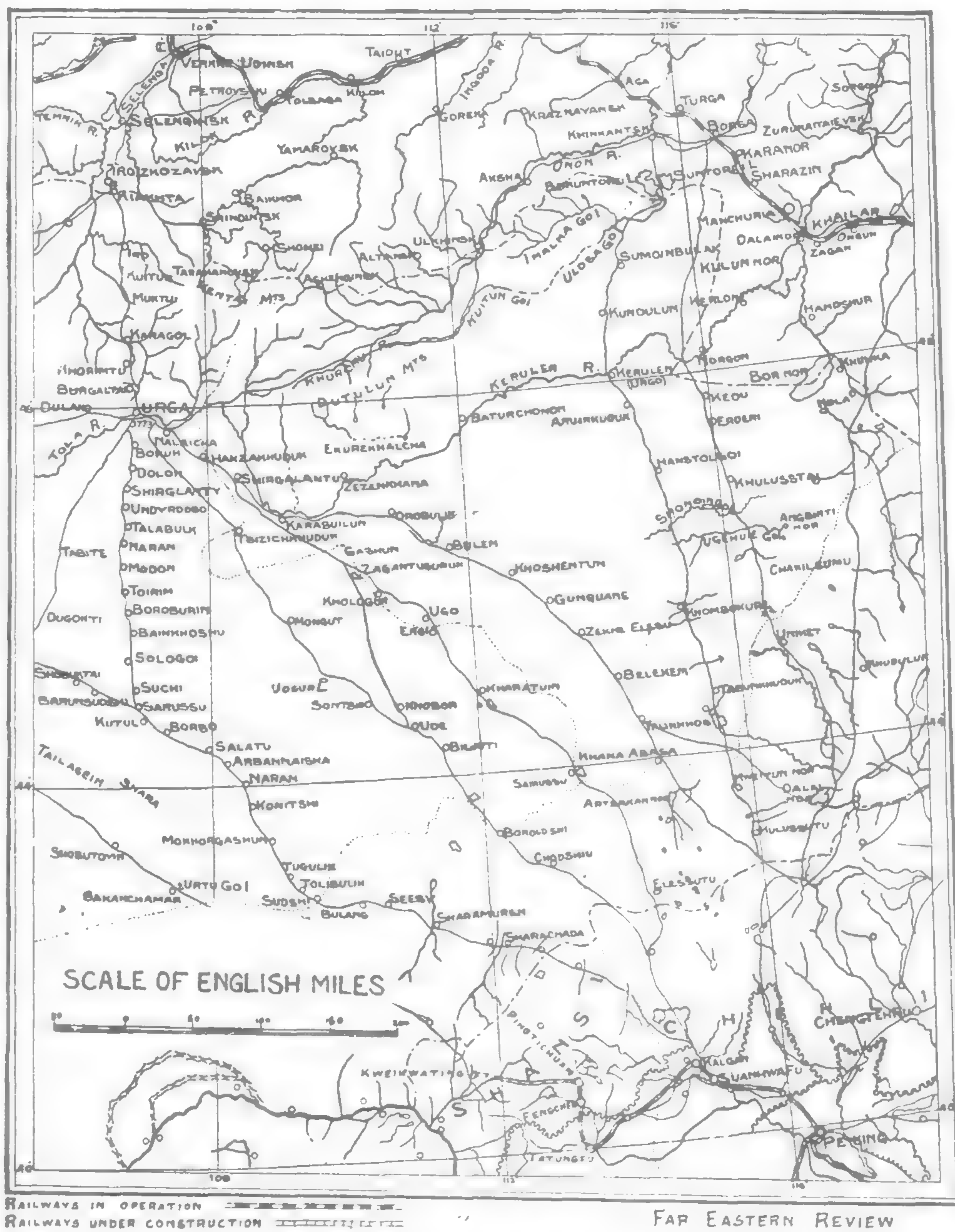
Now that the autonomy of Mongolia has been cancelled and that territory once more comes under the direct jurisdiction of Peking it is only natural that consideration should be given to the building of a railway in order effectively to control it. During the past year serious efforts have been made to establish closer relations with Urga by the utilization of motor cars. Many cars were used during the year, but owing to defective organization, reckless driving by unskilled Chinese, and the absence of proper repair shops the service was found to be anything but profitable. So far as the Government officials are concerned they decided to discontinue the service with the arrival of the cold weather, when motor transport over the plateau automatically ceased. The experiment taught them that only with good roads, good mechanics and drivers, regular stations at intervals across the Gobi, and elaborate organization, could a motor service succeed, and this would cost so much that they turned their attention once again to railway connection.

The return of Mongolia to the national fold has undoubtedly revived the desire for a railway for military purposes

if not for commerce and colonization, and it will not be surprising if a start is made with a survey early next year though money is tight. There are observers of developments in this territory who aver that Japan will be only too ready to supply the necessary capital, it being believed that Japan is particularly interested in the movement which has culminated in the cancellation of Mongolian autonomy.

A railway will be a distinct advantage inasmuch as it will open a large tract of splendid grazing land, as well as afford a shorter route to Europe if it is continued from Urga to Kiachta and on to the Siberian railway at Verkhne-Udinsk. It has been estimated that such a line will reduce the distance by rail to Europe by some 600 miles, while the time for the journey from Peking to London would be cut down to nine and a half days. The project is not a new one. In the past Russia made several attempts to have this line built with her own Imperial desires in view, but China would not become a consenting party. However, Mr. Alfred Sze, present Chinese Minister in London, when Minister of Communications in 1912 recommended the building of the line with Chinese capital as far as Urga, naming Tls. 100,000,000 as the probable cost. His idea was to have the line built as a private one by private Chinese investors, but the proposal did not mature owing probably to the disturbed

state of the country following the overthrow of the Manchu Dynasty, and the subsequent internal turmoil due to the differences between the politicians and militarists of the North and South. General Hsu Shu-cheng is now said to be arranging for a domestic loan to carry on the work.



MAP OF SECTION OF MONGOLIA SHOWING POSITIONS OF PEKING AND URGU.

On this map is shown the existing railway between Peking and Fengchen. At present construction work is under way as far as Pingtichuan. If an extension is made to Urga the line will take off either at Pingtichuan or from some point between there and Kweihwating (also spelt Kueihuacheng). A line to connect Peking and Chengtehfu, commonly known as Jehol, and which is shown on the map, is also being talked of in official circles at Peking. The Japanese already hold the right to build a line from Chengtehfu northwards to Taonan.

state of the country following the overthrow of the Manchu Dynasty, and the subsequent internal turmoil due to the differences between the politicians and militarists of the North and South. General Hsu Shu-cheng is now said to be arranging for a domestic loan to carry on the work.

Railway System with Shanghai as Terminal

Noted Engineer Urges Definite Policy in China's National Transportation System—Railways, Roads, Waterways and Ports

AT a meeting of the Engineering Society of China Mr. H. von Heidenstam, Engineer-in-chief of the Whangpoo Conservancy Board, read a brief paper as an introduction to a discussion on Shanghai as an industrial and commercial metropolis.

Following an explanation showing how the question had arisen in connection with the investigation of the problem of improving the Shanghai Harbor, and mentioning that while the Whangpoo Conservancy might be expected to solve the technical features of the harbor question there were many other questions on which Shanghai's future depends, he said:

"The average Shanghaileander, whether Chinese or foreign, has had no particular inducement or encouragement to think of Shanghai as a whole or of its future, and his motto is as often as not *apres nous le deluge*. He thinks of, or at least acts only for, his own particular business, and if confronted with larger issues, has that very natural inclination to shrink from them. The foreign trader considers himself generally, and with perfect right, as a passing guest. The Chinese resident in the foreign settlements lives as a guest in his own country because it suits his particular purposes, while the Chinese in the city and suburban areas profit by the proximity of the settlements and add to its importance but have not worked, so far, for the development of the whole on sound lines.

"Shanghai now begins to compare with the big centres of Europe or America with their complicated and highly organized forms of life and administration.

"The difficulty is that Shanghai as a whole is not organized for tackling any big problem. On the contrary, there are two foreign settlements, of which one is international, and at least two Chinese administrative areas. This has, of necessity, produced a multiplication of all public services and administrations, which complicates all issues and renders the final ideal of a large unified Shanghai, with an equally good government as the Settlements now have, very difficult of attainment.

Shanghai, a Model City for Chinese

"Is a greater Shanghai in every sense of the word possible? That is the question before us.

"Shanghai can, however, become really great only by being not only two model foreign settlements, but also a model Chinese city for Chinese, which at the same time is a suitable place for foreigners.

"If the foreigners want to work on sound lines, it is necessary for them gradually to enlist and awaken Chinese sympathy and support for the future of Shanghai. This should not prove so difficult if a wise policy is adopted. As long as the 'settlemental' development is so conducted that it will provide model administration, protection, trade-profit and western 'wisdom' for the Chinese, they will flock to Shanghai. To assure, however, active Chinese support and co-operation, if it is at all possible, it is necessary to devise some line of development, providing for such co-operation, with the aim of finally merging all of Shanghai into one unified community at least in certain respects.

"What is done to benefit Shanghai as a great future centre will also ultimately benefit China, and the Chinese, and if the Chinese do not look upon it in that light, they should be educated to do so.

"As a small step in the right direction the writer would propose that in all public schools in Shanghai, courses in 'municipal government' should be given.

"Improved labor conditions may prove necessary if the supply of labor and its quality should be kept up to the high figures required for an industrial metropolis. The social and economical revolution, in the throes of which the world is now suffering, will have its aftermath also here—and it is as well to realize it in time.

Transportation Policy Wanted

"China needs a definite policy in the national transportation system, roads, railways, waterways and ports, avoiding unnecessary competing lines and ports and development on rational not on political lines.

"In this connection, in the unification schemes which figure in both the Government programs and the Consortium schemes, the scrapping of some of the projected lines, which are in unnecessary competition with others and with existing good water routes, or are directed towards unsuitable ports, should only be for the general good. There would be no selfishness on the part of Shanghai in suggesting that the whole railway net of Central and North China be so modified that the traffic will converge to and diverge from the principal port. It is up to the interests of Shanghai who desire its future development, to further and influence a national railway policy with the chief ocean terminal of the country at Shanghai."

As to industrial development, Shanghai is already a *fait accompli*, but can it develop and maintain its lead? It is on these subjects the speaker especially suggested that the various experts, who are members of the Society, should come forward each in their own line and cast the horoscope.

Industrial and Construction Questions

What about the supply of fuel for power supply, heating and ships (coal and oil)? How is Shanghai to get cheapest supplies and to make itself independent of other countries? How much coal and oil will be needed? How are the general conditions for industries in Shanghai as compared with other centres?

What about food supply? How is the situation as to building materials, cement, stone, glass, etc., etc.? Can cement be locally made? Can one build a real sky-scraper on the bund?

From where will the iron and metals be derived? Can structural steel be made in Shanghai?

What are the chances of supply of timber from Japanese, Chinese, American and Russian sources? What can North China supply?

What about the general financial and economical institutions and measures required to lead and support the industries?

The speaker urged the various local experts to indicate the possibilities of development and remarked that their efforts could be greatly increased by a general agreement. He concluded by noticing the special demand for education and research in Shanghai. A schedule of the suggested technical questions in relation to Shanghai development was circulated as an appendix to the paper.

An interesting discussion followed the reading of the paper which was closely followed by a large meeting. The proceedings closed with a hearty vote of thanks to the author.

Independent American Loan to China

The Pacific Development Corporation and Hayden, Stone & Co.

Ready to Lend up to \$30,000,000

THE history of the new loan of \$5,500,000 to China by the Pacific Development Company, secured on the revenues of the Wine and Tobacco Public Sales Tax is one of the most interesting stories in connection with finance in China of the year or indeed of some years past. The contract was signed on December 10 by Mr. E. B. Bruce, of the Pacific Development Company, who arrived from America but a week or two previously, in company with Mr. Galen F. Stone, of Messrs. Hayden, Stone and Company, of Boston, and others, in connection with the formation of the Sino-American Bank, referred to elsewhere in this issue. When they set out from America they did not do so with the object of entering the loan field. The situation was such when they got here that they were made an offer which they deemed it business on their part to take up. As Americans they were interested in preserving the prestige of their country, and as business men they were in the position personally to deal with whatever was placed before them without having to undergo the strain and delay of referring all points of negotiation to principals in New York, as is the usual case. Within a few days they had considered everything and the agreement was signed, a feat of speed in loan negotiation that astonished the Chinese officials and one which marks an epoch in foreign financial relations with this country, for the reason that it is the first time on record that two principals have come to China and conducted business themselves. This signifies two things. One that there is increasing interest in America in affairs in this part of the world, and a readiness to enter the financial field, and another that business can be done speedily when responsible men are able to come and do it.

The loan made by the Pacific Development Company sprang from the negotiations recently carried on in New York between Mr. John J. Abbott, of the Continental and Commercial Trust and Savings Bank of Chicago, and Mr. Hsu Yuan, representing the Chinese Government.

On October 10 an agreement was signed in New York by the representative of the Chinese Government with the Continental and Commercial Bank for a short term loan of \$5,500,000 to take up the three-year Gold Treasury Notes issued in connection with a loan for \$5,000,000 floated in November, 1916, by the same bank, and which matured on November 1, 1919. Interest to be 6 per cent. per annum and the discount to the bankers 91. On October 30 the bank put on the market "\$5,500,000 Republic of China six per cent. two-year Gold Loan Treasury Notes of 1919," dated November 1, 1919, and due on November 1, 1921, with interest payable on May 1 and November 1 of each year till maturity. The price was "98½ and interest to yield over 7 per cent." as the prospectus put it.

A Second Loan Agreement

The agreement for this loan of \$5,500,000 carried with it an option to raise an additional \$25,000,000,* which the Chinese Government's representative asked the Continental and Commercial Bank to take up immediately after the signature of the agreement. Negotiations were entered into, and on October 21 a second agreement was signed by Mr. Abbott in New York for the Continental and Commercial Bank for a loan of a minimum of \$10,000,000 and a maximum

of \$25,000,000 gold, on the basis of the Bank making a public offer to sell as much as it could. For this loan the security offered included the surplus revenue of the Salt Administration, as well as the revenues of the Wine and Tobacco Public Sales Tax.

The Banks connected with the projected new Consortium protested against the loan on the ground that it was premature in view of the pending formation of the Consortium, and as soon as it was known to the bankers of the old Consortium which made the Reorganization loan of \$25,000,000 to Yuan Shih-kai in 1913—secured on the salt revenues—there were more protests on the ground that the new agreement violated, as to security, Article 17 of the Reorganization Loan Agreement. French interests also protested on the ground that they likewise were interested in the security and specially in the reorganization of the Wine and Tobacco Tax Administration, and claimed a share in that work. The combined assaults rather nonplussed the Chinese Government who deemed it expedient to suggest to the Continental and Commercial Bank that the Goods Taxes be substituted for the salt surplus as collateral security. The Bank was naturally disturbed by this important change, as well as by the protests, and, as the old group of bankers about the same time signified a willingness to make a loan to China of some £5,000,000 on certain conditions, and the New York market was at the same time being besieged by Allied countries for loans, the Bank considered it advisable to forego the option and let the larger loan go.

Those working on the formation of the new consortium, which has been held up by the demands of Japan that Manchuria and Mongolia be exempted from the operation of the policy of the consortium, endeavored at this period to bring greater pressure on Japan to persuade her to forego her claims, and to join in making an advance of money to China to tide her over her immediate difficulties. The endeavors came to nothing, however, and while China had managed to cover the redemption of the three-year bonds maturing on November 1, 1919, she was still without the finances she so keenly desired, the loan for \$5,500,000 being merely a paper transaction.

It was at this juncture, when the coast was clear for an independent American loan, that Mr. E. B. Bruce, of the Pacific Development Company, and Mr. Galen F. Stone, of Messrs. Hayden, Stone and Company, and others arrived in China and were acquainted with conditions. Without any hesitation they decided to take up the agreement abandoned by the Continental and Commercial Bank. The negotiations were brief, because the negotiators were able to decide the various points that arose personally and promptly, and on December 10 they had agreed to loan \$5,500,000 and take an option for the issue of \$25,000,000 more. The security for this loan is similar to that for the Chicago loan, with the right to undertake the reorganization, with the Chinese, of the Wine and Tobacco Tax Administration. Such reorganization, if it is undertaken, will be on the lines of the reorganized Salt Ad-

* The agreement provided, if the total loan of \$30,000,000 were made, that \$5,000,000 should be set aside for the retirement of the old bonds, and \$1,000,000 should be used for the reorganization of the Wine and Tobacco Tax Administration, an American satisfactory to the bankers to be appointed by the Chinese Government as Associate Inspector-General of the Administration. Beginning from November 1, the bankers were to have paid to the Chinese Government \$1,000,000 per week until the exhaustion of the balance of the \$24,000,000 due to the Government.

ministration. There will be an American Co-Director, and in this connection Mr. C. L. L. Williams, son of Mr. E. T. Williams, former First Secretary of the American Legation, Peking, and later head of the Far Eastern Division at the State Department—has been selected by the Chinese.

Naturally opposition to the loan arose in quarters immediately the news became public. First, because it struck for independence of financial activities, which, of course, is counter to the policy of those wishing to inaugurate a new consortium; second, because it gave independent American interests a decided foothold in the financial arena; third, because it did not suit the book of certain Chinese who are playing politics, and fourth, because the loan is a gold one made when the rates of exchange are very much against the country. Certain foreign interests and the Anfu Club—a militaristic political party—appeared to be working an opposition movement in co-operation—working for the same end but inspired by different motives.

The reactionary element of the Anfu Club were, in particular, most active, for in addition to the fact that the American loan means no money coming into their own pockets, it actually carries with it a loss to Anfu officials in the Wine and Tobacco Administration, for the reorganization of the whole system will naturally do away with the opportunities for "squeeze" which are alleged to exist. Another reason for the Anfu Club's objection to the loan may be found in the fact that it threatens to undermine the power which it has wielded for its own ends for some years past.

The Government is in sad need of money for purposes of administration, to carry out its plans for the demobilization of superfluous troops throughout the country, and to carry out its numerous constructive plans pending and after the conclusion of peace with the South. The loan was, therefore, calculated to strengthen the hands of the progressive section of the Government against the Anfu Club, and permit the former to carry out its policies with a greater degree of independence than it has hitherto enjoyed.

Judged from a Chinese national point of view, there are two advantages attached to the loan. One that it demonstrates the willingness of responsible American capitalists to operate independently in China, if they can, and that the terms upon which it is made involve the reorganization and consequent increase in the efficiency of the Wine and Tobacco Tax Administration. Indeed this will be all the more apparent when it is remembered that the terms of the loan provide for the lending of further sums beyond the \$5,500,000 and up to a total of \$30,000,000 conditional upon the value of the security as ascertained after investigation. There is, therefore, a direct incentive for effort on the part of the Chinese Government towards assisting in the remodelling of the monopoly, an incentive which carries with it the further and even greater benefit that when the loan is repaid by China she will receive back the security she pledged in much better condition than when it was originally pledged. The rejuvenated Administration, managed by Chinese and American directors, with American district inspectors in the provinces—the system resembling that prevailing in the Salt Gabelle—will, it is estimated, be able to do more than double its existing income.

Under the arrangements as at present worked out the Wine and Tobacco Tax Administration will eventually have a director, a vice-director, two councillors, four secretaries, two chiefs of departments, eight senior clerks, and sixteen junior clerks. The director is to be Chinese, the vice—or associate—director will be American, while the rest of the Bureau staff will be Chinese. This, of course, only refers to Peking, the head offices of the service. The reorganization of the branch offices and collecting stations will come up later for consideration as will also the entire system for collecting the revenue from the wine and tobacco taxes. This is all the more necessary as it has been plain in the past that much wine and tobacco have reached the consumer untaxed, while "squeeze" during the collection of the revenue has been difficult to detect—probably due as much to the difficulty of administering the tax and the

(Continued on page 46)

Modern Telephone and Electrical Factory in China

Some indication of the development of the electrical industry in China may be secured from the picture which we reproduce here, showing the modern factory which has been completed by the China Electric Company in Chapei District, Shanghai. This Company was organized in July, 1918, as a result of a contract between the Western Electric interests and the Ministry of Communications at Peking. The main buildings contain over thirty thousand square feet of floor space. They are located very close to Soochow Creek, which affords most convenient means of transportation.

A large part of the machinery has already been installed and already over 150 Chinese mechanics are being instructed in the manufacture of telephone and telegraph equipment. The Company is to have its own power plant, and the machine equipment will enable them to manufacture in China all of the apparatus and supplies entering into the construction of modern telephone and telegraph systems.

The China Electric Company is half-owned by the Ministry of Communications and half by the Western Electric interests. They have the exclusive right in the Republic of China to all the patents of the Western Electric Company, which include Common Battery, Automatic and Wireless Telephone Communication, as well as telegraph apparatus and Printer equipment. Native materials will be used as far as possible.

A special feature of the organization is the educational work that is being done to train Chinese experts. Chinese graduates of American Universities are given three-year

courses in the mammoth factory at Hawthorne, before returning to take up work in China. Already several of these men have arrived. In addition, the Company has a regular schedule for Chinese students whom they are sending to America for training. In this manner they are assured of a Chinese staff capable of handling the work that is before them.



The New Factory of the China Electric Company, Shanghai

The demand for extension of all means of communication is very great, and this Chinese Company already has on hand a large volume of orders.

Independent American Loan to China—contd. from page 45.

number of small stations required for collecting it. A simplified system of collection is now stated to be under consideration, commencing with the larger centres and gradually spreading until the entire country is covered efficiently.

In the reorganized Bureau Chang Shou-ling, former Vice-Minister of Finance, and an official of long and good standing under both the Imperial and Republican régimes, will continue in charge as director. He has had considerable experience in his present office and is highly regarded as an upright and competent man. This \$30,000,000 loan on the security of the Wine and Tobacco revenue, of which \$5,500,000 has already been paid up to write off the old loan, makes the American interest in the Wine and Tobacco Tax greater than that of any other foreign country, and, consequently, the appointment of an American vice—or associate—director to assist in the reorganization of the monopoly would follow precedents already created and would not, therefore, be regarded as inappropriate, though the French Government takes a different view and has lodged a strong protest against the loan.

The "Asiatic News Agency" understands that under inspiration, certain members of the House of Representatives at Peking are interpellating the government with reference to the employment of an American citizen as associate-inspector-general of the proposed Wine and Tobacco Bureau. The interpellants demand that nothing should be definitely decided by the government without the previous approval of the Parliament because it concerns the finance and diplomacy of China. The "News Agency" also says it is reliably informed that a certain Legation has already informally approached the Chinese Government protesting against the employment of an American to the post of associate-inspector-general of the future Wine and Tobacco Administration and that if the proposal must be realized between China and America, then a financial expert of this country must be employed as *adviser* to the Ministry of Finance. From every point of view, this important matter cannot be settled at present because various interests are involved in it. "Previous to his departure, Mr. Stone and Mr. Bruce informed the Government that America has no selfish motives and that this loan will be pooled with the New Consortium."

As we go to press we understand that the U.S. State Department has informed the bankers concerned that they do not approve the loan, so the end is not yet.

American Standard Ships Building in Shanghai.

A high compliment was recently paid to the Kiangnan Dock and Engineering Works by Mr. J. L. Luckenback, vice-president of the Luckenback Steamship Company of New York, and at present doing patriotic duty as technical expert for the United States Shipping Board, for whom the Kiangnan Dock Company is building four 10,000-ton standard ships. The photographs published herewith show two of the vessels in course of construction, and with the work done on these and the others Mr. Luckenback expressed the highest satisfaction, declaring that they will compare with any built anywhere else both in regard to design and workmanship. The first of these vessels, the *Celestial*, will probably be launched in March, and is expected to be in commission within a month of her launching.

In addition to the four steamers for the American Government the Company is building a number of other vessels, one being for the navigation of the Upper Yangtze River.

To cope with the American and other orders the equipment of the dockyards was radically improved and brought up to modern requirements. American tools and American machinery dominate, though a number of machines were built at the yards during the stress of war, when it was impossible to import plant in any quantity from foreign countries. Important changes were made in machine shops and a new one was built embracing the latest American practice both in regard to lay out, lighting and machinery. In this shop are being built the engines destined to drive the standard ships now being constructed. In the manufacture of the American Gorham engines and motors, the patent rights for which were purchased by the Kiangnan Company, the highest skill and efficiency are being shown, and the numerous ships are being built and machinery being manufactured by Chinese workmen, numbering some 3,000—under Mr. R. B. Maucham, the Superintendent, and fourteen foreign and nine Chinese engineers.



View of two Standard Steamers under Construction—looking Aft.

In order to handle large craft such as those now being built the Company is widening its dock from 52 to 61-ft., and when the alterations are completed it is expected that any steamer large enough to reach Shanghai will be able to be docked.

New ways were erected on a large piece of land newly acquired to the west of the dockyards and fullest use is being



View of Standard Steamer under Construction—looking Aft.

made of the area. In the foundry, pattern and carpenter shops, boiler works, and moulding department too, extensions have been made, while new machinery for drilling, punching, searing, flanging and rolling plates has been installed.



View of Port Side of Standard Steamer showing two Strakes in Place

The Directors are Admiral K. N. Lew and Captain K. W. Kwong, while the Secretary is Mr. H. K. Kwong. The construction is all under the direction of Mr. R. B. Maucham. Directors and staff are to be congratulated upon the impression their work has made upon the representative of the American Shipping Board.

Mr. Luckenbach, speaking generally, paid a high tribute to other dockyards and shipbuilding works in Shanghai, being greatly impressed by their enterprise in installing modern and up-to-date equipment and by the fact that they have, in his opinion, the largest shipbuilding works on the China mainland.

Big Central Station for Peking

The project to construct a great central station at Peking to serve the Peking-Mukden, the Peking-Suiyuan, the Peking-Hankow and the Pukow-Tientsin-Peking lines is again being discussed. The Ministry of Communications had the matter under discussion when the great war put a stop to all large enterprises, and it was then decided to purchase a large tract of land to the immediate north of the Temple of Heaven and join the tracks of the various lines mentioned. At present the Peking-Hankow and the Peking-Mukden railways terminate at separate stations a few hundred yards from each other. With a central station for the accommodation of both there would be a through line from Hankow to Mukden, and if the Yangtze River is ever bridged or served with a train ferry, passengers boarding a train at Hongkong or Canton will be able to go the length of China without changing trains, and they will be able to proceed to Europe with no further transfers than was the case with the pre-war Siberian service. A similar through service will exist from Shanghai to Peking and either to Hankow or to Suiyuan, for as soon as rolling stock sufficient to enable a proper schedule of trains being maintained is secured the Pukow service will start from Peking instead of from Tientsin as at present.

The central station idea takes shape at this time on account of the desire that exists for the junction of the Peking-Hankow and Peking-Suiyuan lines under one managing director. Up till very recently there were two, but when Dr.

C. C. Wang, Managing Director of the Peking-Hankow line, was despatched to Europe General Ting Shih-yuan, the Managing Director of the Peking-Suiyuan line, was put in charge and he feels now that the work connected with the two lines can be carried out by one Manager, more particularly if the two services are linked up into one trunk line.

The sketch plans of the big station were, we understand, prepared before the war, and preparations were made to purchase the land, or rather to settle terms for resumption whenever the Government decided to act, in order to prevent a speculative rise in values.

When the Chinese houses now occupying the site are demolished an area large enough to care for all the lines terminating at present at Peking will be available, and ample yard and siding room will be left after the erection of a spacious station and offices, etc., for future expansion.

According to later Chinese reports, the Ministry of Communications has sanctioned the suggestions of Major-General Ting for the erection of a central station and work will be commenced early next spring. Further, the scheme for the amalgamation of the Peking-Hankow and the Peking-Suiyuan Railways as suggested by General Ting will also be put into effect and after the amalgamation, General Ting will become the director-general of this trunk line with two assistant directors.

Industry at High Pressure in Shanghai

In an article published in the "Shanghai Times" Christmas Number on "Electricity as a Factor in the Prosperity of Shanghai," the following remarks occur:

The cotton industry is in a state of frenzied activity both so far as the forcing of production of yarn and cloth from existing mills is concerned and also the erection of new mills and the extension of old. At the time of writing this article, 16 mills aggregating 563,000 spindles are either in course of erection or are about to commence building operations. When it is recalled that the total number of spindles installed in Shanghai a year ago was approximately 800,000 and that the prospective near future total is 1,400,000 spindles, one may perhaps be permitted to hope that the present relative positions of demand and supply may not become reversed! It is characteristic of the "war created" tendency towards conservation of energy that all these new mills will be operated by electricity derived from the Shanghai Municipal supply mains.

Flour milling is also extremely active and no less than 4 new mills having a total daily output of 26,000 bags of flour are in course of erection, apart from the fact that the older mills, almost without exception, have extended their original plants.

Electric power is also supplied by the Municipal power plant to oil mills, rice hulling plants, tea polishing machinery, and for the manufacture of needles, scent, soap, candles, camphor, chemicals, gunny cloth, mineral waters, socks, sausages, ice, pills, tooth brushes, ink, casks, paper, manure, lace, drugs, buttons and optical lenses also for the operation of plating plants, air compressors, dyeing plants, iron foundries, tanneries, feather cleaning plants, silk winding, wood working, carpet cleaning, air humidifying, timber seasoning, shipbuilding and elevators of all descriptions.

In order to carry into effect the plans to disband useless Chinese soldiery a Disbandment Commission will be appointed early in January under the chairmanship of General Chin Yun-peng the Premier. It is expected that the Commission will complete most of its preliminary work before February.

The Inwardness of the New Consortium

By George Bronson Rea

IN August of last year, the State Department reversed the policy of President Wilson towards American participation in loans to China and officially invited the Governments of Great Britain, France and Japan to join in the organization of a new consortium for the future financing of China. Special inducements were held out to Great Britain and France by offering to carry their share of the loans until such time as they could take them over. The principles so widely advertised in 1913 to justify the President's withdrawal of official support to the old American Group were discarded. What was deemed inimical to China's interest and subversive of American institutions in 1913 became legitimate and praiseworthy in 1918 and without any attempt to justify the change in policy. In advocating the creation of a new grouping of international finance, the President will place China in financial vassalage for the next twenty years. For the new consortium is not only to furnish the loans required for administrative and reconstruction purposes, but every holder of a railway or industrial concession in the four countries is asked and expected to surrender them to the consortium for financing. The plan was so far-reaching, idealistic, and impractical, that no attention was paid to the official invitation in Paris or London until long after the peace negotiations were under way, and it was not until May that the representatives of the Groups met in Paris to perfect their organization and carry out the commands of the State Department.

The far-reaching effects of the proposed consortium may be sensed from the fact that China will require at least \$200,000,000 for the purpose of disbanding its army of over 1,200,000 who have been busily engaged in fighting each other and laying waste their own country for the past four years. Then there will be a currency reform loan of \$50,000,000, to place the coinage on some stable basis, followed by the Hukwang railway loan of about \$150,000,000 to complete the obligation of the old Groups. Here we have a total of \$400,000,000 in loans, of which, at least, three-fourths must be raised in the United States within the next year or so, and before any other railway or industrial loans can be placed on the market.

China has signed contracts for the financing and construction of approximately 12,000 miles of new railways, the loans for which have yet to be issued. Under present costs of construction they will call for over \$80,000 per mile, or a total of \$1,000,000,000. In addition, there are various industrial concessions which will call for another possible \$500,000,000. The pooling of all these interests will, therefore, necessitate the raising of loans aggregating \$2,000,000,000. Obviously, even if Japan carries her full share and Great Britain and France participate in part, these vast sums cannot be raised in the United States on the Chinese Government guarantee during the next ten to fifteen years, if then. So the pooling of these railway and industrial concessions simply means that they will never be financed except under such terms and conditions as may be dictated by the consortium. This places China in a state of financial vassalage from which there is no escape during the life of the consortium. With these unexecuted contracts awaiting to be financed, China will be prohibited from entering into any new obligation for many years to come. The consortium will become a super-government holding the purse strings,

and the nation that dominates the consortium will dominate China. The representative of the consortium will become in fact the Shogun, the Dictator, not only of China, but of all individual enterprise calling for a Chinese Government guarantee.

The attempt to pool all the railway and industrial concessions can only result in grave disorders if not further revolution in China, and a boycott against American trade. Through the signing of an American railway concession in 1916, which provided terms far in excess of all other contracts, it will now be compulsory for China to revise all her outstanding railway loan agreements, and admit all nations into participation in the profits of the railways. This will entail an additional charge on the railways during the life of the loans, of hundreds of millions of dollars, and pave the way towards foreign intervention in the control of the lines in the event of trouble. The elimination of foreign control or participation in the profits of their railways became the fixed policy of the Chinese Government. Over \$15,000,000 was paid out during the past ten years to repurchase these rights in the old concessions. But in 1916, a grafting official without any regard to the cherished policy of the nation, and without reference to the parliament or the will of the people, revived these benefits in the American contract, solely to obtain the use of the advance money paid over on the loan. Due to China's secret and other agreements, the participation in the profits must now be extended to all others. When it is recalled that foreign interference in their railways was the direct cause which led to the revolution in 1911 which overthrew the Manchu dynasty, it is reasonable to predict further trouble when the people are fully informed as to the far-reaching nature of the American contract terms. Owing to the protests of other Powers whose rights were invaded in specifying the lines to be constructed, the American contractors have no place in China where they can operate. In order to save this contract and correct the errors of diplomacy which made it possible, the idea of the new consortium was conceived by the American Minister. The American contractors cannot proceed without the consent of the other Powers and the other Powers cannot finance their concessions without being conceded the American terms or better. When the Chinese people wake up to what it all means, there will come a revulsion of feeling against Americans, which under skilful propaganda may result in a serious loss of trade, if nothing worse. The consortium may only succeed and benefit China by confining its operations exclusively to administrative loans.

At the first meeting of the official groups held in Paris in May last, a resolution advanced by the French group was passed, that only such banks as were representative of the financial interests of the nations to which they belonged, would be admitted as members of the groups. This was aimed against the inclusion of the independent French Bank Industrielle de Chine, for the reason that one-third of its capital stock was held by Chinese. It was merely a phase of the bitter fight waged for some years in France by the official group against the new intruder into its Chinese preserves, a corollary to the similar opposition on the part of the American and British official groups to the activities of independent bankers in the same field.

In retaliation, the Banque Industrielle de Chine refused to comply with the invitation of the French Government to

pool its concessions, and, as the government dares not place itself on record as opposing the legitimate right of the independent bank to equal opportunity in China, there is no power that can compel it to surrender its valuable contracts to the proposed consortium. The brother of the president of the bank is sub-Minister of Foreign Affairs, and will undoubtedly see to it that the bank is permitted to operate independently. The bank holds a contract with the Chinese Government for the financing and construction of the Yamchow-Yunnan-Chungking railway under a loan agreement for 600,000,000 francs. In addition, it has a concession for the Pukow Harbor Works, the Yangtze River bridge at Hankow and the public utilities for the city of Peking under a loan agreement of 150,000,000 francs, or a total of 750,000,000 francs. With the present costs of labor materials, transportation, etc., these loans will have to be increased at least fifty per cent., or a total of 1,125,000,000 francs, equivalent to \$225,000,000 at par.

The Pukow Harbor Works Loan embraces the establishment of industries and the execution of public utilities in the city of Peking calling for the construction of tramways, reorganization and improvement of the electric light system, and waterworks, construction of markets, public buildings, museum, parks, etc., and the repair and improvement of the sewers and roads. The contract, therefore, hands over to the independent French bank practical control over the public utilities of the capital city of China.

The railway contract held by the bank is distinctly part of the old Russo-Franco-Belgian scheme to cut China in half by a north and south strategic railway that would permit Russia on the north to join hands with her French Ally on the south and menace the approaches to India from the northeast through the neutral territory of China. It was the culmination of years of cunning Russian diplomacy working hand in glove through her old Ally and financial agent. It constituted a direct menace to India, the integrity of China and the life of Japan. From the international political standpoint it was one of the most audacious schemes ever carried out, and made possible through the venality of the Chinese interested in the Bank.

When the Banque Industrielle was frozen out of the official French Group in the new consortium, its management, after refusing to pool their concessions, immediately set to work to organize its own party of engineers to proceed to China to conduct the surveys for the railway. They calculated that this would take at least two years, and by that time financial conditions would be so improved as to permit them to proceed to issue the loan in installments and carry out their obligation over a period of ten years. This is a clear cut statement of the exact situation in France. There has been no criticism directed against this independent French move.

Acting upon the advice of the General Staff, the Japanese Government in September (four months after the French refused to pool their concessions), declined to permit their railways and industrial concessions in Inner Mongolia and Manchuria to be included within the scope of the consortium. As a result, a storm of criticism has been raised against Japan in the Chinese and American press, and the State Department has notified Japan that it refuses to recognize its right to exclude her concessions in these territories. Now the railway concessions held by Japan in these territories do not exceed 1,200 miles. The pre-war cost of constructing railways in this comparatively flat country, was estimated at \$30,000 per mile, and at the present time, this would be increased fifty per cent. But we may accept that these costs will be doubled. The present value of these concessions, or

rather the amount of the loans required for their construction, will then be \$72,000,000. With all possible industrial and mining concessions added, the total amounts of loans required for the Japanese concessions in Inner Mongolia and Manchuria should not exceed \$100,000,000. The unbuilt lines in Shantung are not included in this, as Japan is willing to place these in an international pool or divide them with the Chinese. They do not exceed 400 miles with a pre-war value of \$20,000,000, and a present value of \$30,000,000.

The Chinese and their American friends now make the claim that the Japanese concessions in Inner Mongolia and Manchuria are a direct menace to Peking, and the refusal to pool these railways must be accepted as irrefutable evidence of Japan's aggressive designs in this direction. It is only necessary to recall the strategical significance of the French Yamchow-Yunnan-Chungking railway concession, and its relation to the Russian plan to cut China in two from north to south, and the first mortgage that the same combination has on the public utilities of Peking, to offset this accusation against Japan. The distinct pro-Russian flavor of some of the contracts entered into by China would compel Japan to hold tight to her concessions in these districts as her only safeguard against the future come-back of her old enemy.

The Japanese decision to exclude Inner Mongolia and Manchuria from the scope of the consortium was influenced by the highest strategical considerations, in order to protect themselves against Russia, a task that China, in the past, has proven incompetent to undertake herself. From the financial side of the question, if Japan should accept the invitation of the consortium there is no guarantee that her concessions will ever be financed. She will be called upon to subscribe at least \$100,000,000 in the consortium loans for reorganization, currency reform and the Hukwang lines, before any attention could be given to her own concessions in the north, and then she would have to take her chance with the many other railway loans that would immediately demand recognition. In other words, Japan will be called upon to raise her share of the consortium loans to the extent, perhaps, of \$150,000,000, without any assurance that her own concessions will be financed. She will have contributed more than would be necessary to complete the lines herself. So from the purely selfish viewpoint, Japan's position on the consortium has much to recommend it.

In criticising Japan, it is well to bear in mind that the most important concession ever granted by the Chinese Government is what is known as the Pritchard-Morgan concession held by the Eastern Pioneer Company, Limited, of London. It embraces the mining rights to the entire province of Szechuan, an inland empire containing over 60,000,000 inhabitants. There is no indication that it will be pooled in the consortium, in fact, it is certain that it will not be. If it is, this simply increase the task of the consortium, and means the concession will also be placed in cold storage until such time as the American investing public has undergone several attacks of indigestion from an overdose of Chinese bonds. There is no criticism raised against the exclusion of this concession from the consortium.

Tibet is closed to railway mining and industrial enterprise, through an agreement between Great Britain and Russia and accepted by China. Russia has prohibited railway construction in Mongolia to prevent the colonization of that vast territory by its rightful owners. Yet with all these facts before us, the American government aided by Chinese press propaganda, is taking a one-sided view of the problem and concentrating its diplomacy towards compelling Japan to surrender her concessions, while not one word of protest or criticism has been directed against the French Bank who created the precedent, or any attention paid to the Szechuan

concession or the position of Tibet and Mongolia. Japan is entitled to a square deal in these matters as well as China. Her concessions were obtained in the identical manner employed by other Powers to compel China to sign the agreements. The present trend of American diplomacy and criticism can only result in widening the breach between the two nations. It is impossible to concentrate on one Power

and hold it up to the contempt of the world, when others who have created the precedent are proclaimed innocent and incapable of wrong. The way we are proceeding can only terminate in another failure, to satisfy the one-sided ideas of those who refuse to face the facts of one of the most delicate international problems that the world has to face.

New York, November 15, 1919.

Electric Lamp Making in Shanghai

The manufacture of electric lamps is now to be ranked as one of Shanghai's important industries. The factory set up at 15 Robison Road, Shanghai, by the International General Electric Company, and conducted by the General



Lamp Factory at No. 15 Robison Road

Edison Corporation—a subsidiary company—manufactures from 15,000 to 20,000 lamps per day, and employs a staff of some 400 work people. The factory is constructed on modern lines with particular attention to hygiene. The employees are entirely Chinese supervised by American and American educated Chinese engineers. They are chosen for skill and quick thinking and are paid accordingly, as a result the wages received are higher than is paid for factory work requiring less skill. All employees are required to learn sufficient English to enable them to keep a record of their work.



Stringing the Filaments Prior to Being Placed Inside of Bulbs

Out of the 400 employees but few of them ever saw an electric lamp before entering the factory and that they have developed into clever workers speaks volumes for the management.

The operation of blowing the electric bulb through its various peregrinations to the final test, and the packing of the completed product for shipment is most interesting. The bulk of the work is done by Chinese women, especially the work of placing the delicate metal filaments inside the globes. Each individual lamp represents a highly technical engineering feat. As the product passes from one department to the other, it is constantly under the supervision of specially trained men in order to avoid any lamps which may prove faulty being sent to the shipping department.

An efficient system of checking is used in all the China General Electric Edison Company's factories throughout the world where plants are established and as a result of this careful inspection the public has come to know that an electric bulb stamped with "G. E. Edison" is a guarantee of its quality.



The Glass Factory, where the Bulbs are Blown

In the making of electric lamps sand plays an important part, the work requiring sand of a particular nature. To obtain this the Company's engineers scoured China, and, being successful, the factory was erected. Another interesting feature of this new industry is that every box of lamps ready for shipment from the factory bears the trade mark "Made in China" and the China General Electric Edison Company claim the distinction of introducing it.

These lamps are sold either through Messrs. Andersen, Meyer & Co., who are the sole distributing agents in Shanghai, or by the International General Electric Company direct to importers in the Philippines, the Dutch East Indies, Siam and the Straits Settlements, which fact alone proves of infinitesimal value in the way of advertising.

Mr. W. M. States is Manager in the Far East, exclusive of Japan, for the International General Electric Company, Mr. H. C. Stone being the Assistant Manager.

Mr. H. E. Page is the Managing Director of the General Edison Corporation, whose factory is the subject of this notice.

The outlook is extremely good and in the future, as demand calls for it, other devices upon electrically manufactured lines will be entered into.



Cutting Glass Tubing—the first Operation in the Manufacture of an Electric Lamp



A Corner in the Packing Departments. Note the National Trade-mark—"Made in China"



One of the many Inspections that the Lamps Pass Through before Coming up for Final Inspection

Radical Amendment of British China Co. Law

On January 1, 1920, a British Order in Council comes into force which will seriously affect certain companies established in Shanghai and other parts of China and registered under the Hongkong Companies Ordinances as China Companies. The new Order lays it down that no person other than a British subject resident within the limits of the Order shall act as managing director or in any position similar to that of managing director, or shall otherwise exercise general or substantial control of the business of a China Company. This means that several important and well-established companies will have a great deal of trouble thrust upon them as a new year gift. Unless present managers or managing directors who are not British are changed the company responsible for the neglect will be liable to a fine of \$50 for every day during which the default continues, and failure to comply with the provisions of the Order shall be a ground upon which an order for winding up the company may be made by the Court. Another principal point is that the Order applies the Fire and Marine Insurance Companies Ordinance to China companies of local registration. The "North-China Daily News," the leading British paper in Shanghai, says this means that such companies doing fire and marine insurance business will now have to come into line with the purely Hongkong companies, and deposit \$100,000 either in cash or approved securities in order to start or continue business. At the same time summary penalties imposed on these companies for offences are increased from £20 to £200. It is well known, the paper adds, that in the past a number of companies having a merely nominal, if indeed any British interest, were registered under the Hongkong Ordinances. From time to time the inconvenience of this was shown by the fact that while the British Court had jurisdiction over the company as such, it had none over its personnel, as in some cases there were no British directors. Subsequently, when local registration of China companies was permitted, it was enacted that the majority of the directors should be British, but this did not meet the case in the least, as it was always possible to put in figure-heads as directors, who had actually no control and little real interest. The present legislation makes it certain that in British companies, real British interests and control will predominate.

The American Chambers of Commerce is naturally indignant and is seeking an interpretation from British official sources before making representations to the State Department.

Shanghai Tramways in 1919

The following are the approximate traffic figures of the Shanghai Tramways for 1919 as compared with 1909, the latter the first complete year of the Company's working:—

	1919	1909
Car Miles	4,500,000	1,979,001
Passengers	95,000,000	11,772,715
Gross Receipts	\$2,102,600.00	\$570,030
Less: Loss by depreciation of subsidiary Coinage	521,000.00	116,089
Effective Receipts	\$1,581,600.00	\$453,941
Miles of Route	17.45	16.28

There are now more than 637 motorcars registered in Peking.

The Grand Canal

Conditions on the Lower Part of the Northern Section Call for Expert Treatment

IN contrast with the Southern Section of the Grand Canal—a name which, in the interest of truth, should now be altered; whatever claim it may once have had to the title—the Northern Section, between Kwachow and Tsingkiangpu, has received some attention during the past few years; mainly, I understand, through the intelligence and influence of the late General Hsü Pao-shan, better known as “Tiger” Hsü, who employed the troops under his command in grading and stone-facing the banks from near the Yangtze at Kwachow, to near Yangtze-ch’iao, below Yangchow. The work looked well, when I saw it in July, 1918, but I learned later that the piling was very defective and weak; and there is always a chance of the stonework sliding into the Canal. *Vide* Photograph No. 1.

Near Shapo there is a high, and solid-looking stone bunding, of considerable age, on the east bank; designed to protect the city and district from floods emanating from the lake of that name. There are several sharp bends in the Canal near Shaopo.

It was very noticeable that east of the Canal, the country, which is below the summer level of the Canal, is very fertile. Numerous hamlets are visible from the embankments; the country is liberally dotted with clumps of trees; and the crops looked excellent; and I believe proved to be so at harvest time. To the west of the Canal, however, practically no cultivation was observable; nothing but a chain of lakes—or, more properly, shallow lagoons.

During the trip, we passed six dredgers, four of them working in a very leisurely manner. The photograph of one of them (No. 2), herewith shown, indicates the fact that the machines of very low power; and the amount of mud dredged in a day’s work is very little. Grab-dredgers can do little good to the Canal and surround-

ing country; but powerful suction-dredgers might provide large areas of land, especially to the westward, which could be placed under cultivation. It appeared to the writer also that a careful survey should be made of the chain of lakes (lagoons) west of the Canal, which in their present condition are of little use to anybody.

By deep-dredging portions of these lagoons, and depositing the mud to a height above any calculable flood level, lakes of a fair size and depth could be created for the breeding of fish; while the reclaimed land should produce abundant crops. The drainage towards the Yangtze would require the consideration of experts.

One of the contributory causes of the present unsatisfactory condition of the Canal in this region is the manner in which—formerly, if not still—the dykes have been handled. Instead of dredging the bed of the Canal, and employing the mud for some useful purpose, the practice has been to raise the dykes with mud—not from the Canal bed—but dug out of the country at the inland foot of the dykes, to the east and west; with the result that, in places, the bed of the Canal is actually above the level of the surrounding country.

The accompanying notes on conditions on the lower portion of the northern section of the Grand Canal are of moment in view of the improvement work which is projected under an agreement with the Siems-Carey Railway and Canal Company on the upper section of the canal, and the necessity which exists for thorough-going improvement. The information is furnished us by a gentleman who can unreservedly be described as an expert on the waterways of Central China, having had many years’ intimate experience on the Yangtze River, the Grand Canal, and the inland lakes and creeks. The subject deserves the close attention of all authorities interested in commercial development and in the condition of the waterways of Central China—which are the great trade arteries—particularly in view (1) of the agitation which has been going on for some time for systematic efforts or effect improvements, and (2) the attention which was drawn recently to the matter by the British Chamber of Commerce Conference held recently at Shanghai. If the Chinese Government will immediately appoint a Yangtze Conservancy Board, composed, of course, of experts with experience of the waterways, much future trouble and loss will be saved. There is really no excuse for the condition into which the rivers and waterways of China have got, and experts alone can economically restore them to an efficient state.—Editor.



The Custom station near Hwaiianfu. This used to be considered the worst “squeeze” station in China. One of the old Imperial Customs Stations



Tungkwan (East Gate) at Yangchow. City gate tower in background

The result of any breach that may occur at such points can be easily imagined.

Another matter which is liable to cause trouble is the apparent lack of any combined action on carefully considered lines. There is nobody responsible for any definite scheme of Canal Improvement, and the inhabitants of one district are at liberty to carry out any works they please, without the slightest regard for possible consequences in other districts.

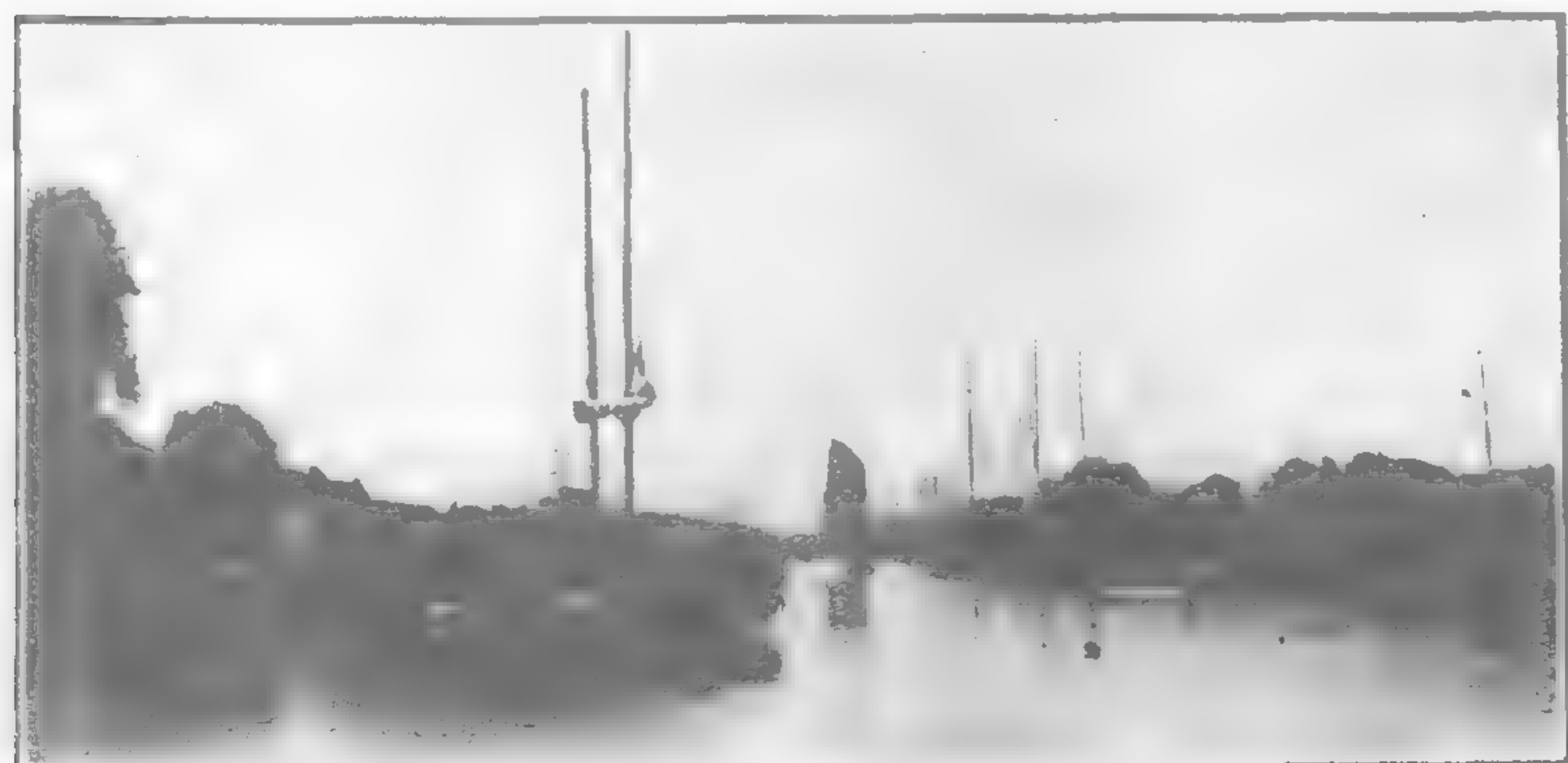
All the waterways connected with the Yangtze system, and the main river itself, have got into such a dangerous condition that conservancy questions should only be dealt with by most highly competent experts of wide experience; of whom a large number are now urgently needed to save the situation.



No. 1—Southern section of Grand Canal showing stone facing on left made by "Tiger" Hsu



No. 2—A dredger at work. Lacks power, but better than nothing



The Chinese obstruct traffic on the Grand Canal by lashing two junks together and loading them up as shown in this picture

The Chairman of the Ewo Cotton Spinning Company stated at the annual meeting held at Shanghai on December 22, that the normal profit on cotton yarn is Shanghai Tls. 5-6 per bale, while to-day most mills are making Tls. 50-60.

Chinese-American Bank Inaugurated

The first Chinese-American Bank to be launched in China—the Commercial and Industrial Bank of China—held its inaugural directors' meeting on December 11 at Peking, when there were present some forty odd shareholders representing in person or by proxy over 82,300 shares. Credit for the launching of the enterprise, so far as foreign capital is concerned, must be given to Mr. Galen F. Stone, of Messrs. Hayden, Stone & Co.; Mr. A. H. Wiggins, of the Chase National Bank of New York; Mr. E. B. Bruce, of the Pacific Development Company, who not only represents important interests in America but also in the Philippines and China; and Mr. V. Meyer, of Andersen, Meyer & Co. The Chinese side is represented by Mr. Hsu Un-yuan, who journeyed to America to effect arrangements with the capitalists mentioned, ex-Premier Chien Nung-hsun, President Hsu Shih-chang, ex-President Li Yuan-hung, ex-President Feng Kuo-chang, General Li Shun, Governor of Kiangsu Province, etc.

The following are the officers of the Bank:

Board of Directors: Chien Nung-hsun, Hsu Un-yuan, Fu Liang-tso, Chang Shou-ling, who is Director-General of the Wine and Tobacco Bureau, Lo Hung-nien, Chang Pi-ting, Galen L. Stone, Albert H. Wiggins, Edward B. Bruce, J. A. Thomas, late Manager in China of the British-American Tobacco Co., and S. B. Stevenson.

Board of Superintendents: Li Hsun, Sheng En-i, Stevenson and Messrs. Carson and Fenneman.

At a meeting of the Board of Directors, following the shareholders meeting, Mr. Chien Nung-hsun was elected president, Mr. J. A. Thomas, first vice-president, and Mr. Hsu Un-yuan, second vice-president.

The total authorized capital of the Bank of \$10,000,000 has been fully subscribed and the first call of 50 per cent. of the same \$5,000,000 has been fully paid up.

Mr. Galen L. Stone, speaking for Mr. Wiggins, Mr. Bruce and himself, issued the following statement after the organization meeting of the stockholders:—

"It is a great pleasure to the American group, who have taken a half interest in the Commercial and Industrial Bank of China that the plans which have been worked out in connection with this bank have been carried through so harmoniously and successfully. It is our hope and expectation that the new bank will be an important instrument for strengthening the close friendship between China and America and the means of materially helping the commerce and industry of China.

"It is particularly pleasing to us that this enterprise was initiated in China and that the group of Chinese who have invited us to join with them in this bank represent such a wide and varied field of interests, and, on behalf of Mr. Wiggins, Mr. Bruce and myself, I take great pleasure in acknowledging the delightful hospitality which we have received from our Chinese partners in the bank during our stay in Peking and our great optimism for its bright future."

M. Obata, the Japanese Minister at Peking has protested to the Waichiaopu against the nation-wide boycott movement on two grounds: the movement is against the principle of the Sino-Japanese Commercial Treaty, and against the principle of international amity between two friendly nations. The Waichiaopu declared that the boycott movement is a spontaneous movement of the people, and the Government cannot be held responsible as long as the people do not violate any law, civil or criminal.

Sir John Jordan, the British Minister in Peking, has resigned and will return to England on or about the 20th January, 1920. Mr. Beilby Alston, the British Chargé in Tokyo, will succeed to the post.

Jardine, Matheson's New Office Building

Messrs. Jardine, Matheson & Co. will shortly begin the construction in Shanghai of a five-storey office building, which will front on the Bund with two flanking wings running down Peking Road on the one side and on the private roadway next the Yangtze Building on the other. The principal dimensions are approximately as follows:—The Bund frontage 173-ft.; Peking Road wing 161-ft.; and the south wing 147-ft. The average height is 80-ft., rising to the truck of a flag staff to 135-ft. The building will be of reinforced

concrete faced with granite, and is designed to permit the addition of an extra storey at some future date.

The main entrance is in the centre of the Bund frontage, which leads through spacious outer and inner halls to the main staircase, flanked on each side by elevators and strong rooms. The staircase, 16-ft. wide, will be carried out in marble and bronze, the walls being panelled in the same materials. Separate entrances are provided for the offices on the Peking Road front, the machinery showroom, shipping offices, compradores, and the service staircases.

The architects have chosen a free rendering of modern Renaissance for their design. The two principal facades are



New Offices for Jardine, Matheson & Co., in course of construction at Shanghai

almost identical, consisting of dignified colonnades running through three stories supporting a heavy entablature, the whole resting on a heavily rusticated base. Much thought has been given to insure the highest possible fire-resisting qualities. Reinforced concrete, granite, steel windows, ample fire-escape staircases, and the very latest fire fighting appliances with special pumping plant and tanks will be installed with this end in view.

Three separate lavatory blocks with access from every floor have been provided for the foreign and native staffs. Provision has been made for the installation of an inter-departmental telephone system with private exchange, in connection with the public system. A specially designed insulated double roof, capable of being taken down and rebuilt when the additional storey is added, is included in the design. At the rear of the building provision has been made for seven garages, with quarters over them for 32 coolies, including bath accommodation.

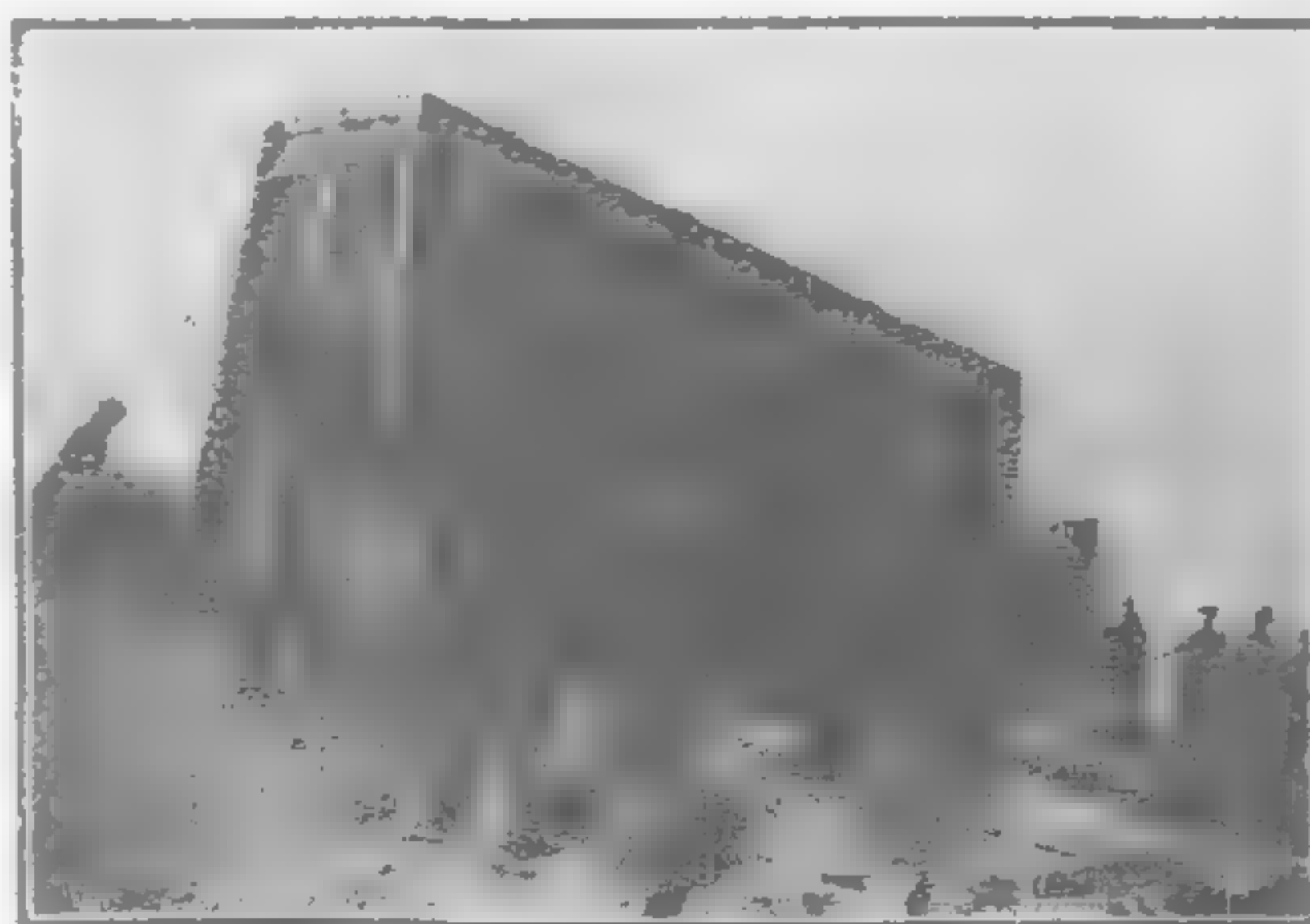
Building operations will commence as soon as the old building is torn down, the work of demolition being well under way; and it is estimated that the new building will be ready for occupancy two years thereafter.

Messrs. Stewardson and Spence, Associates of the Royal Institute of British Architects, are the architects, and have been assisted by Mr. C. Luthy, S.I.A., Consulting Engineer. The illustration with this article is the reproduction of a sketch made by Mr. A. W. Graham-Brown, A.R.I.B.A., a member of the firm of architects.

The old building, which was erected in 1850, was a Shanghai landmark, and its passing recalls the great progress which has been made in China since its early days. The Rev. C. E. Darwent, in his handbook on Shanghai, estimates the original cost of the land at the time the old hong was built to be about £500, and, writing 20 years ago, estimates its value at a million sterling; and in the intervening years similar progress is indicated in the activities of the firm of "Ewo" (the Chinese name for Messrs. Jardine's) which the old building has housed. For example, here the plans for the first railway in China were formulated and carried into effect; cotton industries were conceived and organized; shipping lines expanded and extended their routes; and the Shanghai branch of the firm of Jardine's grew from an office with half-a-dozen employees to the great organization with its many ramifications which we know to-day. The firm which has played so great a part in the progress of Shanghai and will continue to hold its place in the future of China will be fittingly housed in the monumental structure which is now under way, although many China residents will view with regret the demolition of the stately old building which has meant so much to Shanghai of the past.

A comparatively new application of electric power in Shanghai, where coolie labor has hitherto prevailed, is the almost universal adoption of electrically-driven concrete mixers and hoists in connection with the erection of sky-scrapers and factories which are coming into being upon all sides. This application at present calls for the total of 360 horse power for its operation and is an unquestionable boon to the contractor who is thus provided with readily transported motive power with the very minimum of capital outlay, the operating motor being almost invariably hired from and maintained by the Municipal electricity department. Bearing in mind the enormous quantity of timber which has to be sawn up to provide "forms," "moulds" or "centering" in the course of the erection of every ferro-concrete structure, it is a remarkable fact that building contractors have only recently recognized the possibilities of power-driven saws as compared with the manually operated variety, the first electrically-driven installation of the former nature having lately been commissioned.

Handley-Page Work in China



The fuselage of the Handley-Page 1.

On November 11, 1919, eight large packing cases containing the "H.P.1"—the first Handley-Page aeroplane to arrive in China—reached Nanyuan Aerodrome, Peking, and were duly unpacked in the matshed hangar, which the Chinese Government had built for the erection of the giant aeroplane. From

that day the work proceeded steadily in spite of innumerable difficulties, until at 1.30 p.m. on December 6, the first of the 350 H.P. Rolls Royce engines was started. Five minutes later the second engine was also running, and within a quarter of an hour both had proved that, in spite of their five months of inactivity and a long journey by boat and rail, they were fully capable of doing the revolutions required of them. This speaks volumes for the Rolls Royce engines and for the skill of Mr. M. E. Mamin, whose task it was to install them in the aeroplane.

At 3.30 p.m. Capt. W. Mackenzie, an experienced pilot specially sent out to China by the Handley-Page Company, was satisfied that all was ready for the first flight and within ten minutes, the engines were opened out and the machine left the ground, after running 150 yards, and climbed to 1,000-ft. The aerodrome was circled and a perfect landing was made in spite of the very rough surface of the ground, which badly needs repairing if it is to be used for regular landing purposes. In addition to Captain W. Mackenzie, the machine carried Mr. T. A. Barson, Chairman of the Peking Syndicate, Ltd., which was responsible for the introduction of Handley-Page aeroplanes into China; Mr. A. J. Barson (Observer), and in the cabin, Lt.-Col. H. St. Clair Smallwood (Handley-Page representative) and Mr. W. W. Lamsdale, who has had the task of erecting the aeroplane under most difficult conditions.

A public exhibition flight was forthwith advertised to take place on December 8 and despite heavy wind and the presence of dust, the machine took the air with Mr. T. A. Barson, Mr. A. C. Henning, Mr. W. F. Tyler and four Chinese gentlemen as passengers, and attained a height of 2,000-ft., when a course was set for Peking. The wind at



China's Handley-Page 1 being prepared for its first flight at Peking

this altitude was blowing at about 60 m.p.h. but in spite of this the machine flew steadily, and the altimeter showed 3,000-ft. when it arrived at Yungtingmen. The visibility was very poor but a fine view of the Temple of Heaven and

its grounds was obtained. The machine was now headed back to Nanyuan, which was reached in an incredibly short space of time with a 60 m.p.h. following wind. A perfect landing was made once more after a 30-minute flight under conditions in which no aeroplane possessed by the Chinese Government could possibly have left the ground.

Unless accidents are to happen to both aviators and spectators arrangements must be made by which the spectators are prevented from wandering about the aerodrome and leaving no clear space for the machine to land in. An accident was nearly caused through neglect of this, and was only avoided thanks to the skill and presence of mind possessed by Capt. Mackenzie.

Taking into consideration the weather conditions, the weight of the machine (13,000-lbs.) and the difficulties under

which it was erected the flight was clearly a praiseworthy performance.

On December 16 the aeroplane made its official test flight with representatives of the Chinese Government on board. The machine left Nanyuan aerodrome, Peking, at 2.15 p.m. with 14 passengers and 1,200-lbs. of sand making a total of well over 6 tons. After climbing to 6,200 feet three circuits of Peking and the surrounding country were made. Both the engines and the machine behaved splendidly throughout the flight in spite of the intense cold at 6,000 feet. Mr. K. Y. Wei, General K. Y. Tsing, and Mr. D. T. Chow represented the Chinese Government on the test, the two former occupying the front seats. After landing they praised the machine most highly and expressed themselves as completely satisfied. The landing was made a few minutes before 5 o'clock. The load was 160-lbs. heavier than arranged for.

China's Great North-West

II.—From Paotou Across the Ordos Desert

By Rodney Gilbert

THERE are three ways of getting from Paotou to Ninghsia, the first city of importance which the traveller visits in North Eastern Kansu. Throughout the summer the big flat-boats which rely upon the current to carry them down the Yellow River, are towed up stream with heavy cargoes of merchandise from Tientsin and it is a simple matter to arrange for a passage, including food, for a few dollars. The journey usually requires at least twenty days and may take thirty-five or more—all depending upon wind and current. An alternative is to travel with pack mules or with carts following the northern and western banks of the river through Tengkou and Shihsuitze, a journey of sixteen or eighteen days. A third trail, left open to the traveller who is properly equipped and who is not daunted by the word "desert," so often inaccurately descriptive of the country, is the camel-road across the Ordos Desert. Here again, once launched upon the wilderness of sand and grass, one has the choice of three roads—or rather the season makes the choice for him.

When I arrived in Paotou I imagined that I should find nothing to detain me there and that I should at once arrange for a passage by boat and set out in a day or so. China has a way, however, of curing such assurance in the traveller, and the seasoned wanderer learns in due course to accept delays with Oriental placidity and to greet good connections and progress by prearranged schedule with pleased surprise. I was twenty days in Paotou considering and discussing boats, carts, mules, horses and camels, the monotony of the proceedings being relieved by nothing but a five-day encounter with the prevalent influenza.

My old Mohammedan cartman who showed the common inclination of his kind to do something more than he was paid for, which is so rare in China that it always prompts a comment, appeared the morning after our arrival to announce that he had discovered my former innkeeper, a Moslem named Li Kung, and that he would shortly call upon me. In due course this Mr. Li arrived, and with him came the headmaster of the little mosque school on the hill, a middle aged man named Fei who had some Chinese scholarship and more polish in the Chinese way than most Mohammedans. I had known them both four years before and we were all genuinely

glad to meet again. I was taken away to a dinner at Mr. Li's house at the head of the steep street which leads past the mosque, and I told them there of my ambition to get away on the road to Kansu at the earliest possible date. While we were talking, sitting cross-legged on a warm, rug-covered *k'ang* devouring great quantities of the boiled mutton which is everywhere the *picce de resistance* at Moslem gatherings, others of the "hui-hui" (Mohammedan) community dropped in, and before I departed I had developed in them all an interest in my transport which was exceedingly helpful to me and which never flagged up to the hour of my departure.

Boats were at first discussed, but heavy gales were blowing, the season was at an end and every day lessened the chances of getting away by water. Word came from a point 60 *li* up the river that the winds from the Wula Shan made progress impossible and that out of 40 boats which had huddled together at that point for protection from the storms, eight had been wrecked, while several men had lost their lives. Many boat owners who had been waiting for cargoes and passengers, intending to return to Ninghsia, sold their craft and bought animals, or returned on foot. After a day or so there were no boats, and all discussion of the question of water transport was dropped. For reasons which it would be tedious to explain, but which hinged largely upon military commandeering, carts were also out of the question and nothing remained, to one encumbered as I was with boxes, but camels.

Buying Camels to Cross the Ordos Desert

The camel season had opened, the animals were in from their summer grazing, and the market place was full of them, but the caravans had not begun to move. They were due from all directions, due to start from Paotou any day, and almost every hour for ten days, one or another of my Moslem friends would appear with the good word that a string was being made up, or was due from Kueihua, which would depart. One day the town suddenly became brilliant with Mongols, disporting themselves upon good ponies, or tall, quick stepping riding camels, and I learned that the Prince of the Alashan was due to arrive from Peking on his way back to his rock fortress in the desert. That afternoon he arrived with a long string of carts and a Mongol guard in antiquated Chinese cavalry uniforms, and I was given to understand by the local military

commander that it could easily be arranged for me to accompany him as far as Tengkou, or perhaps to Shihtsuitze. I made immediate preparations, only to learn a little later that the Prince was going off on a tangent into the desert to visit relatives, and as his course was well out of my way, a journey with him was out of the question. It was not until I had grown desperate and had made something of a nuisance of myself among my "hui-hui" friends that someone suggested that I buy camels myself and hire a man who knew the Ordos roads to take me on my way.

From that time my course was clear. Nearly all of my friends were incidentally buyers and sellers of animals and those who were not were nevertheless filled with that Moslem passion for animals which draws them irresistibly to every gathering where animals are exhibited for sale or for any other purpose. They all haunted the daily horse and camel fair, buying when bargains were offered, selling when the opportunity came, and watching every transaction with unflagging interest whether or not they bought or sold. In these devotions I joined them, and with their help made assiduous search for a man who knew the Ordos and who was willing to guide me across it. Days again elapsed, for while many knew more or less of the way, there were few who would even contemplate setting out with so limited an expedition as mine promised to be.

Finally one morning I encountered a boatman whom I had once known in Ninghsia and with whom I had subsequently weathered a twenty-two days' journey on the Yellow River. He was delighted to see me, and as he had just bought a poor, lean old camel he tried to persuade me to accompany him on the journey to Ninghsia by the roundabout cart highway. I tried in turn to coax him into taking the Ordos trail, pointing out the economy in time, but he said he was not familiar enough with the grass lands to risk it. After much debate he left me and in a short time returned with my friend the teacher, Fei, and a huge gorilla of a man, one-eyed, and black from exposure to the weather, who loomed modestly and awkwardly in the background while he was being described as the beau-ideal of all camel drivers, as the one man who knew every cow path in the Ordos, and as a cook of passing proficiency. I accepted all this with suspicion at the time, but I can forever testify that not only were these tributes within the bounds of truth but that many other virtues and qualifications which this man possessed were wholly omitted. He was the most satisfactory servant whom I have ever had in China, and by his great physical strength, his thorough knowledge of his business, his good nature and his constant solicitude for my comfort, he swept aside all difficulties and made of the Ordos journey, which might otherwise have been a gruesome ordeal, an exceedingly pleasant excursion.

Through the mediation of the teacher, Fei, a bargain was soon sealed by the terms of which the man whose name was Ting was to assist me in my preparations for the journey, guide me through the Ordos by the best available route, acting as both camel driver and cook, bring me safely to Ninghsia and there assist me in the disposition of my camels if I had reason to sell them. For these various services he was to receive the lump sum of five dollars and his food. With this arrangement completed the last serious difficulty was removed, for camel buying through the medium of my numerous Mohammedan friends and acquaintances presented no difficulties. The material from which we had to select was unlimited and varied. Every morning there were two or three hundred camels fresh from grazing tied up in the market place and the owners were mostly Mongols, while the middlemen were Mohammedan friends of mine and of my friends. I knew nothing whatever of a camel's fine points, but I was taken by Fei along lines and lines of them and was shown all manner of beasts of all sizes and ages, ranging in approximate

value from \$20 to \$80. After having seen them all I knew no more of them than at the beginning, so placed myself entirely in Fei's hands and asked him to find me two moderately good ones at a fair price which I could sell in Ninghsia, if need be, without serious loss. One after another was led out, made to kneel, mounted by the astute schoolmaster and ridden up and down before a multitude that hung upon the margin of all such deals. In less than an hour I was the proud possessor of two animals which seemed to me to be particularly handsome and clean limbed. One was a mare between three and four years old, described as a riding camel, and certainly very sprightly in her gait, and the other a gelding seven years old which showed a disposition to complain vehemently whenever he was approached. As soon as the purchase was completed and the price stipulated, the problem of housing and feeding the animals came up, for they are not particularly welcome in ordinary inns, and a little man who looked half Mongol and who was clad entirely in dirty sheepskins was produced and described as a camel-herd. It was his office to take all newly purchased animals unprovided with a home out into the grass lands and to take care of them until they were wanted. I wrote my initials on them in red paint and they were led away. One of my friends then assisted me in the purchase of camel saddles, ropes, and felt mats, and we set about buying a considerable stock of provisions. When all was ready, the camel driver Ting appeared one afternoon with the man in sheepskins and the two animals, and we prepared to leave in the morning. The Mohammedan community called that evening *en bloc* and introduced a wizened little fellow named Wang, a native of Ninghsia, who had bought a camel which he proposed to ride and who wanted to accompany me. As he had been across the Ordos three or four times a year for thirteen years, he seemed a desirable companion, so I agreed to travel with him. It transpired later that he desired to accompany me so that he could get his animal past the Yellow River customs free of charge, which I resented when I discovered it, but he later proved such a genial and useful travelling companion that I had no reason to regret taking him with me.

At this general gathering of the Moslem clans there were several interesting diversions. While we were all standing in the inn yard admiring the two animals in the fading light of an extremely cold day, a little man with a tuft of chin whiskers, clad in the thinnest of summer cotton clothes, came into the courtyard and made an elaborate bow to my friend Li. For a moment nobody seemed to recognize him and then a storm of objurgation was heaped upon him which was completely past my understanding. He spread out his hands and defended himself with an eloquence which was equally unintelligible and it was not until later that I learned the *pros* and *cons* of this encounter. It was a long time before the atmosphere cleared and the conversation was carried on at a pace which I could follow. It then transpired that, twelve years before, this little man had come to Paotou from Kansu, arriving there destitute, and that the Mohammedan community had provided him with a camel, some merchandise and travelling funds. He had gone towards Kalgan and had never been heard of afterwards. This was his first reappearance and again he came to throw himself upon the mercy of the community having no possessions or baggage other than the summer clothes in which he stood. His appearance at first aroused the indignation and wrath of the whole assembly, then they saw something comic in it and later perhaps something pathetic in the spectacle of a man standing out in the snow in the biting wind with his very flimsy summer clothes blowing about him, for the next day I learned that he had been provided with twenty catties of flour, a suit of wadded cotton clothing and some meat, and had set out for Kansu with a number of returning boatmen.

Dramatic incidents followed closely upon one another that afternoon, for scarcely had the excitement aroused by the prodigal's return subsided than two Mohammedan muleteers trudged in, walked up to a man who was sitting on several sacks of pepper and said to him in a matter of fact way so that all the courtyard could hear: "We have just passed through your village to-day and we stopped off here to tell you that your wife died last night." One hears frequently that the Orientals accept such tidings with nonchalance or with fatalistic philosophy, but the person on the bags of pepper made a clear demonstration that this is not always so; for without asking any questions or making any comment, he leaned back against the wall and emitted a hair-raising howl. With absolute indifference to those who came and went he maintained precisely the same position and yelled with the same volume for at least half-an-hour. The two bearers of ill tidings gaped blankly at him for quite some time, then looked helplessly at each other and hurried out of the place.

Off on the Long Trail

The following morning my boxes were sewed in felts and were then roped with a mesh of complicated knots known only to camel drivers, and culminated finally in two loops on each box which are brought together from the back of the camel and are fastened with pins when the animal is loaded. The provisions for the journey, which included twenty catties of flour, twenty catties of bread baked with mutton fat to keep it fresh, five catties of mutton, a catty of tea and some oil and vinegar, were packed in sacks and the animals were led out and loaded. Just as everything was roped in place, the Mohammedan community once more appeared in solid phalanx bearing large trays of perishable edibles done up in the usual red paper which the camel driver Ting looked upon with dismay as the stowing of these gifts entailed the loosening of many ropes, much repacking and reroping. It was almost noon before we were prepared to go, and as the man Wang who was to travel with us had not yet appeared, we set out without him.

Paotou is fifteen *li* from the north bank of the Yellow River. A straggling village known as Nanhaitze, which has a large boat population in summer, might be termed the port of the town. There is a police *yamen* there, a *likin* office, a small temple or so, a mosque, and there are also a few well built farmhouses which serve as inns for travellers who have occasion to spend the night. Just as we left Paotou a dust storm came up and before we had gone a hundred yards our diminutive caravan was completely lost in a yellow swirl that blotted out the whole landscape. In spite of this we made good time and arrived at the riverbank in less than two hours only to find the big ferryboat moored securely to the bank with no one in charge. Upon inquiry we learned that the boatmen had not been able to manipulate their craft in the strong wind and had given up for the day. So there was nothing for us to do but spend the night at Nanhaitze. Ting led the way down to a farmhouse where dwelt a Mohammedan by the name of Yang who welcomed us heartily, helped with the camel packs and then introduced us into a large room which was already crowded with boatmen. The inn-yard was filled with camels and ponies and I soon learned that the animals had been purchased by a number of Nanhaitze boatmen who found it impossible to return by water to Kansu and who were preparing to set out in the morning by the cart road. Upon the appearance of my follower Ting, however, their plans underwent a rapid change. He was greeted with fervour and was immediately cross-examined by all as to what road he intended to take. When he had told them that we were going across the Ordos, a most spirited discussion followed and in a very few minutes it was decided

that they would all travel by the same route, trusting their livestock and their fortunes to the expert guidance of my one-eyed follower. A little later in the day my fellow traveller Wang Chao-cheng rode in on his camel caked with dust, and bulging with his packages in red paper similar to those that had been inflicted upon me at my departure. His arrival and his announcement that he was to be one of the party confirmed all the others in their determination to accompany us, for he evidently had almost as great a reputation as my own Ting as an authority upon roads in the grass lands. Other travellers arrived later in the evening and by nightfall when all had eaten, there were so many claimants to space on the red-hot *k'ang* that I secured farmer Yang's permission to sleep on top of a high flour chest. I woke several times during the night and though the big guest room was dark there was still an animated discussion going on on the *k'ang* as to routes and equipment. From time to time Ting raised a booming voice of authority and silenced all dispute by settling with a word the various points at issue.

In the morning when I tried to make some settlement with the farmer, he refused payment, saying that my friends in Paotou were also his friends and that they would resent it if they thought he had been inhospitable enough to take money from me. All the guests of the inn went with us to the river front where a ferry was waiting and the bags and bundles were at once loaded into the two end compartments of the boat. The central compartment, reserved for animals, seemed to me rather small for the six camels, two ponies and two donkeys which were to occupy it. The donkeys and ponies boarded the craft rather meekly and were herded into a corner, but the camels objected with more than customary obstinacy and it was necessary in every case to carry them on board by main force. One man went ahead with a nose rope and pulled as hard as he dared, while the animal squealed and bellowed. Two men would then take the camel's two hind legs and push them forward until the animal was balanced on his fore toes with his rump high in the air and his neck distended to its greatest possible length. It was not until he was over-balanced that he would lurch forward and put his two fore feet in the boat. Then two more men would seize his fore legs, he would be lifted completely off his feet and carried forward until his hind legs could be dropped inside the boat. With a little more tugging and urging he would then be got into the position he was supposed to occupy and would be made to kneel. Once down loops of heavy rope were passed over his knees, and his shins were roped tightly to his thighs making it impossible for him to rise. This performance had to be repeated with each camel and it took a full hour to get all six animals in place. They continued to squeal their comments upon this outrage all the way across the river and were almost as hard to bring ashore as they had been to load. The adjusting of packs and baggage took another half hour but at last the caravan was made up on the Ordos side of the river with no more water to cross for a good many days' journey and Ting One-eye, as he was affectionately termed by those familiar with him, set out in the lead at the camel driver's characteristic waddle by means of which they set an even pace which never varies and from which one can judge distances, or time where the distance is known, with surprising accuracy.

Joys of Camel Riding

We had scarcely left the river bank when Ting struck out across the mudflats without heed to roads or paths in a direction which I ascertained by the compass to be due southwest. From that time until we saw the Yellow River again we scarcely ever varied from this course by more than a degree or so. I was told that to the east of our course ran a trail through much better country and that to the west there was also a road known to camel drivers upon which were more

wells and springs and which was therefore travelled in dry seasons when the wells on our course had failed.

The first day's journey was not particularly interesting. It was across flat damp lowlands which are periodically flooded by the Yellow River and upon which lay many pools of muddy water. On the higher knobs of ground there were a few farmhouses with small groups of trees and from time to time we came to stretches of grazing lands upon which herds of cattle and horses were feeding. The Wula Shan stood out in the west grey and metallic in the bright sun light while to the south a long low ridge of sand hills apparently running from northwest to southeast lay across our path. There were no landmarks and no trails but we kept on southwest steadily as a ship on its course, occasionally following cart roads a short way or falling into the wake of previous caravans, but without regard to their turnings or windings. After walking for some distance, I decided to ride one of my camels, and as the animals had all been linked in a chain the whole caravan was stopped and I was hoisted upon the leader. I had watched the others mount and it looked easy, but my own awkwardness when I came to emulate my fellow travellers astonished me. Needless to say one does not leap into the saddle of a camel. The animal's head is pulled down within a foot of the ground, the rider puts his left foot just behind the animal's ears, takes a good hold on the saddle and gives a spring. At the same time the animal throws up his head with a snort propelling the rider towards the rear, and the inexperienced will inevitably find himself sprawling on top of the pack on his stomach with his head and arms dangling over the animal's tail. The agile and experienced rider is supposed to turn in the air and land sitting astride the pack. The position in which I landed upon my first attempt occasioned a good deal of amusement and some little concern for I seemed in danger of tobogganning off the rear of the camel. With some assistance, however, I managed to right myself and the caravan progressed.

About noon we came to a small spring in the midst of a rich strip of grass land and Ting suddenly faced about, grinned up at me and said "sok" to the animal whereupon the world collapsed under me in a series of backward and forward lurches. At the first forward collapse I rolled helplessly into the arms of my one-eyed giant and was set upon my feet with much care and solicitude. I then discovered a number of new and original chafes and aches for which no amount of pony riding had provided a forewarning.

Three or four copper kettles were promptly produced, a felt mat was spread on the ground for me with a box on end to break the wind and in a few minutes tea and hot bread were forthcoming on all sides. The camels were turned loose to graze for a time and it was not until mid-afternoon that we set out again. My Mohammedan fellow travellers had planned to travel until three or four the following morning but an hour after dusk when we arrived at running water and a cluster of farmhouses my complaints against the cold and upon the stiffness of my back and the blistered condition of those parts of my frame which were adjacent to the pack saddle moved the caravan to a conference, and it was decided that we should camp there for the night. The place was called Taolaohancheng and was eighty *li* from Nanhaitze. For some time we had been travelling through sandy country productive of very little but desert vegetation and for our camp a clearing of dry sand without briars or thistles was secured, and all our goods and chattels were spread out on the ground. By this time I had discovered that apart from myself, the only gentile, and the above-mentioned six camels, two ponies and two donkeys, there were twenty-six stalwart Mohammedans in our party. In return for Ting One-eye's guidance and expert advice upon all matters, they were only too eager to give him every assistance and I soon learned that instead of

one I had equipped myself with twenty-six able-bodied servants. As soon as the camels and ponies had trotted off to graze, the men set out after fuel. One or two of the older fellows obtained a supply of water from the stream and in less than ten minutes from the time of our arrival there were five bright fires going and as many circles of animated conversation. It was the 21st of October and the weather was exceedingly cold. A high wind had come up at sunset and there was neither tent nor shelter in sight but there was no depression of spirits, and, though some of our party were poorly equipped with clothing and bedding, there were no complaints against the weather. In spite of an unprecedented state of soreness, I found something exhilarating in the good spirits of my companions and by the time we had consumed many gallons of tea between us and had scoffed five large boilers of mutton and noodles I was fully convinced that I was a born nomad and that all the years spent under roofs had been years wasted. The following morning, however, when the entire encampment got to its feet at 3.30 in biting wind, and talked of moving on, a few doubts of my adaptability to this nomadic outdoor life crept into my mind. Considering that we were sleeping under the stars, and very bright stars they were, we were not at all uncomfortable. All the pack-saddles with all the available baggage we piled in a long row on the windward side of the camp and twenty-seven beds were made up on the lee side, heads in and feet out. The exact centre of the long row was saved for me as being the warmest possible spot and I was rolled up in my blankets and tucked in by half-a-dozen hard-handed boatmen. Ting was the last to bed, as he was always the first up and before turning in he collected all the canvas bags, tarpaulins, leather saddle covers and stray bits of felt which he could find and made a continuous roof over the twenty-six prostrate pilgrims after which he found a place for himself.

Part III follows in February issue

S.S. "Henrik" Launched at Shanghai

The New Engineering and Shipbuilding Works, Ltd., launched on December 22 at their Yangtszepoo Works, Shanghai, the s.s. *Henrik* a steamer of similar type to the s.s. *Hero* and *Hydra II* built by the same Company the previous year. The new vessel is the first of a contract of six single screw steel steamers now building for Norwegian account. The dimensions of the steamer are as follow: Length overall, 354ft. 6in.; length B.P., 242ft. 6in.; beam, 37ft. 0in.; depth moulded, 17ft. 0in. Deadweight carrying capacity, 2,050 tons. The vessel is built to the highest class of the Norwegian Bureau Veritas, and is fitted with triple-expansion surface condensing engines indicating about 1,100 H.P. and two cylindrical multitubular boilers built for a working pressure of 180-lbs. per square inch.

The main engines and boilers, as well as most of the auxiliary machinery, were built by the New Engineering and Shipbuilding Works, Ltd., at their Yangtszepoo Works. The steamer is constructed with very large hatches to facilitate the handling of bulky cargo.

What are stated to be the largest locomotive works in the British Empire have recently been opened at the Scotswood Works of Sir W. G. Armstrong, Whitworth & Co., Ltd. The first locomotive built was tried out on November 12, the occasion being regarded as an epoch-making ceremony in the industrial history of Great Britain. A large number of guests attended the ceremony and were highly appreciative of the strenuous changes which had been made in the works from the massed production of shells to that of locomotives. Mr. R. B. McColl, the Manager, is given full credit for the transformation carried out.

Shanghai Electric Construction Company

Progressive Shop Methods used by a Far Eastern Tramway System

THE photographs published herewith are views of the equipment in the workshops of the Shanghai Electric Construction Co.

In the electrical shop all repairs to armatures, including stripping down the cores, re-building and re-winding, are done, the coils being made on the premises.

New commutators are also built up here.

Field coils are stripped down, old insulation removed from the wire and the wire recovered with insulating material, the coil then being re-wound.

All repairs to controllers, including general overhauling every 18 months are done here.

Automatic switches are tested every time the car is given a "mileage" overhaul; the switches are overhauled, cleaned and set to blow at 120 amperes.

Before leaving this shop, everything is thoroughly tested with instruments specially obtained for the purpose. The tests include—

Bar to bar test
Insulation and resistance tests.

In the machine shop the machine tools are much the same as in any ordinary shop, with the exception, perhaps, of the two hydraulic presses and the gas ring.

One of the former is for pressing tyres on to railless car wheels, the pressure being low, usually about 350-lb. The other press in the centre of the shop is used for pressing tram-car wheels on to axles, the pressure in this case being comparatively high, about 25 to 40 tons.

The gas ring is employed for shrinking tyres on the cast iron centres of the tram car wheels. A water ring, immediately above the gas ring, comes into action immediately the tyre has expanded sufficiently to allow the wheel centre to drop into its place, numerous jets of water playing on the tyre all

round its circumference. The effect is quick cooling and slight hardening of the tyre, thus giving longer life.

In the moulding shop all brass casting work is done, the capacity of the shop being such that the Company can supply all brass castings required for 167 cars, including trolley wheels, and also all fittings for the overhead line work.



The Machine Shop of the Shanghai Tramways



The Electrical Repair Shop of the Shanghai Tramways

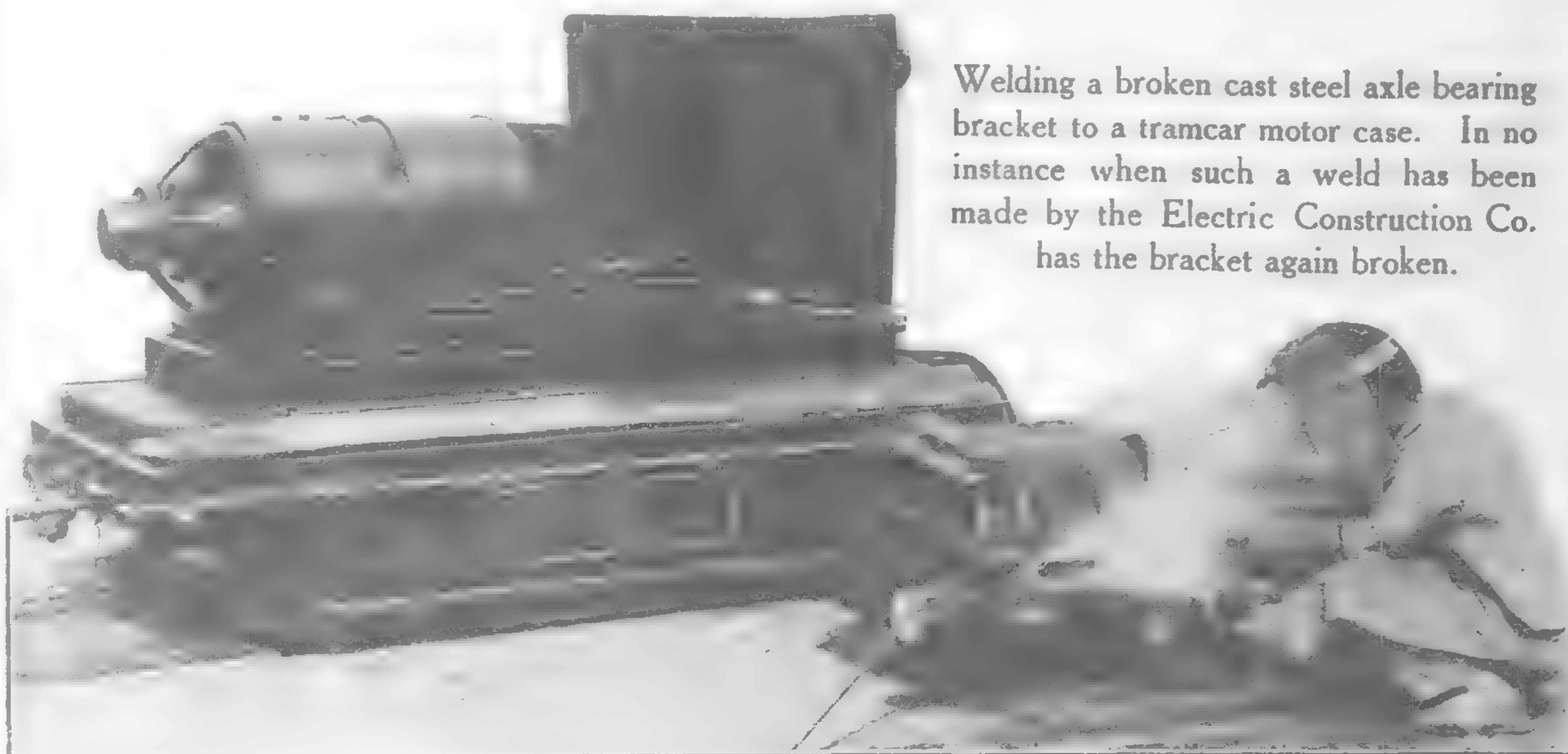
Electric Welding in Shanghai

In order to eliminate one of the most troublesome of track difficulties, the Shanghai Electric Construction Co., Ltd., which controls the Tramways in the International Settlement, experimented some years ago with different methods of welding the rail joints electrically, and, in due course, devised a method whereby the old fish-plates could be successfully and cheaply welded to the rails. A small welding set, mounted on a truck, to allow of its easy transit to any part of the lines was used for

It was found, during the Company's early experiments in electric welding, that the deposit on the rail head should contain at least as high a percentage of carbon as the rail itself in order to secure a lasting weld, by ensuring proper amalgamation of rail metal with that deposited from the electrode. In order to obtain this result, experiments were conducted in the works to produce an electrode which would leave a deposit containing about .5 per cent. to .6 per cent. carbon, a little higher than in the rail. Various methods were tried, some meeting with a certain amount of success until finally efforts were concentrated upon perfecting the method ultimately adopted. The results obtained from the first of these elec-

trodes, when tested mechanically, varied in carbon from .35 per cent. to 1.35 per cent. The Company finally decided to adopt, for rail work, the electrode giving a deposit containing .6 per cent. carbon, which is at least .1 per cent. higher than in the rail, the object being to compensate for the superior hardness of the rail due to cold rolling to which it is subjected not only in manufacture but in service. The welded-up parts on the rail heads are standing up well. The mild steel of which the electrodes are composed, if not coated with the composition in which they are dipped, would only give a deposit (if used

Welding a broken cast steel axle bearing bracket to a tramcar motor case. In no instance when such a weld has been made by the Electric Construction Co. has the bracket again broken.



over two years for welding rail joints and building up rail heads which had become "cupped" at the joints. These hollowed places were due to the weakness of the purely mechanical joint, the bolts holding the fish-plates elongating and allowing a certain amount of looseness to develop where rigidity was most essential.

as electrodes) of soft iron—quite useless for such welding work.

These electrodes are used generally in welding the fish-plates to the rails, as well as the rail heads, in order to ensure completely satisfactory results, and experiments with wheels have also proved satisfactory.

Sewage System for Shanghai

Shanghai has no sewage system, but soon will have. The Works Committee of the Shanghai Municipal Council has approved the main features of a scheme for sewage disposal so far as the Central District, east of Honan Road, Shanghai, is concerned, on the recommendation of Mr. Charles H. Godfrey, Municipal Commissioner of Public Works. Mr. Godfrey has been carrying out experiments for some time on the lines of the activated sludge process with a primitive plant and has been able to deal with 4,000 gallons of sewage a day. He recommends that a qualified chemist—a specialist—be engaged to deal with certain aspects of the system, and that the recommendation of Professor Fowler in this connexion be taken. The preliminary scheme he recommends to be initiated will deal with sewage in the most important section of the Central district until a comprehensive system for the whole Settlement can be undertaken. The sewers will be laid along the centres of the roads in the area to be dealt with from four to ten feet below the surface, and the sewage will be pumped through the mains to an underground concrete collecting tank, whence it will be forced by centrifugal pumps—installed and working in an underground chamber—through a nine inch pumping main, with a head of 90 feet at the summit and with the pumps designed to allow for a twelve feet head on arrival, to the Sewage Treatment Works. The Treatment Works will be operated on the activated sludge principle, and the preliminary scheme as submitted will allow of the treatment of 600,000 gallons daily. The estimated cost of the whole work is be-

tween Tls. 160,000 and Tls. 200,000. This scheme, which has been approved, is designed to relieve the very severe pressure which is already being experienced in emptying cesspools by pumps and carts. Mr. Godfrey will probably visit Singapore to investigate the high pressure water system there, and Rangoon to investigate the work of the pneumatic ejectors.

Motor-cars have made their appearance in the distant city of Nanning, Kwangsi Province, according to reports, the officials owning them driving through the narrow streets to the terror of the populace. The cars will lead to decent roads—that is certain. Officials throughout the whole country have realized the "face" and the pleasure which a car gives, and there is not an official who, like a certain small boy crying for a certain soap, will be happy till he gets one. Incidentally it may be mentioned that it is proposed to build a model jail at Nanning!

The Civil Governor of Honan Province is emulating the Civil Governor of Shantung, and is endeavoring to institute reforms in industry and commerce, conservancy, agriculture, education and taxation, and effectively to prohibit the use of opium.

Engineering, Financial, Industrial and Commercial News

RAILWAYS

New Japanese Railway Loan.—Through the indefatigable efforts of the Japanese railway authorities, it is reported, the consent of the Finance Department was finally obtained at a Cabinet Council on December 9 for the issue of railway loans, amounting to Y.100,000,000, for the fiscal year. The total amount of the Railway Budget for the next fiscal year is said to have been fixed at Y.170,000,000. Of the total sum, the expenditure of Y.70,000,000 will be met by the increased revenue resulting from the projected advance in passenger fares and other resources.

Steamers to Connect with Shantung Roads.—The Japanese Imperial Railway Board has made an announcement relating to the arrangements made for the connection of the railway service between the Imperial Railways and the Shantung railway. The junction is to be made through the ships of the Nippon Yusen Kaisha, the Osaka Shosen Kaisha and the Harata Kisen Kaisha. The new arrangements will come into force on January 1.

Lunghai Loan.—The Chinese Government has sanctioned the continuation of negotiations with Belgian capitalists with regard to the Lunghai Railway loan, which have been suspended on account of the war.

Taoching Railway Extension.—According to the Japanese newspaper printed in Chinese at Peking the loan for the extension the Tao-ching Railway to Menghsien is for the construction of a branch line from Chinghua to Menghsien, being the fore-runner of an extension of the line to Pingyang in Shansi from Chinghua. According to the journal, the loan is £350,000, interest at $1\frac{1}{2}$ per cent. per annum. It is secured by the guarantee of the Chinese Government and the entire property of the railway. In case the revenue of the railway to be constructed is insufficient to pay the capital and interest, the Fu-Chung Corporation shall make the deficiency good by deducting the amount from the freightage on coal to be paid to the Chinese Government. The capital is to be amortized in 3 years after it is opened to traffic. The agreement was signed on October 30, 1919.

Overhead Railway for Kobe.—The Japanese Imperial Railway Board has decided to erect a quadruple overhead line from Nada to Takatori Station with an 18-foot road on both sides of the line. The height of the line will be from 18 feet to 15 feet, the former where tram-cars pass underneath. It has been decided that the extension sections of the Hanshin Electric and the Hanshin Kyuko lines shall be low-level, the Kyuko line being allowed to have a station at Kano-cho, Kobe.

South China Railway Scheme.—The Canton Military Government has despatched a circular telegram to the provinces explaining the scheme which was formulated at a political meeting to establish a Union Bureau for the railways of eight Southern provinces. General Tsen Chun-hsuan will be elected Director of the Bureau and the provincial authorities will be the Vice-Directors. At a meeting of the Canton Administrative Council recently it was decided to create a direct-

orate for the building of railroads in the South-western provinces, with Mr. Tsen Chun-hsuan as the chief director and the military and civil governors of the various provinces as associate directors. The plan for the development of railway construction takes in eight provinces which are entirely or partially under the control of the Constitutionalist forces, they are Szechuan, Yunnan, Kweichow, Shensi, Fukien, Hunan, Kwangtung and Kwangsi.

Purchase of Rolling Stock.—According to the "Shuntien Shihpao" the Peking Department of Communications concluded a loan with the British and Chinese Corporation, which having been submitted to the Cabinet meeting held on November 27 was duly approved. The amount is two million dollars bearing annual interest at eight per cent. The principal is to be repaid in monthly installments of \$100,000, commencing from December, 1920. The loan is secured by the surplus profit of the Kin-Han Railway. The proceeds, says the Peking daily, will be used for the purchase of 12 railway engines, 90 goods cars, and for the improvement of the Canton-Hunan Section of the Canton-Hankow Railway.

Ningpo Railway.—It is reported that steps are being taken to resume work on the Shaohsing section of the Shanghai-Hangchow-Ningpo Railway. For five years not a sod has been turned between Hangchow and Dzaongo. The raised mud track for six or seven miles on this side of the Dzaongo River was thrown up and the two banks and one mid-river concrete pillar for the railway bridge across the Dzaongo River were constructed before the war and have remained at a stand-still ever since. The bridge is to be a two-span one. The track between Dzaongo and Ningpo, however, has been improved considerably. The stones forming it, previously about the size of ostrich eggs, have been broken as small as hen's eggs. Moreover the stations and buildings have been improved.

Chinese Eastern Railway Representative.—Dr. Yen Teh-ching, Chinese representative on the Chinese eastern railway, has left Harbin for his post of Managing Director of the Canton-Hankow line at Hankow. The Peking Government has selected Dr. C. C. Wong, former director of the Peking-Hankow railway, as his successor. Dr. Wong has just returned from his railway investigations in Europe.

Freight Rates on Chinese Eastern Railway.—The Allied Technical Board has resolved that rates on the Chinese Eastern Railway should be based on the gold standard. The Board further resolved to fix the same rate for Romanoff, Russo-Asiatic Bank and green Karensky notes, which means unification of all notes, and a change is to be made, therefore, in the present rate of Romanoff notes compared with gold notes. Instead of being ten Romanoffs to one gold note it will be sixty, which was the rate previously fixed for green Karenskys. Twenty-five per cent. of the amount charged for freight will be paid in small Romanoff notes, which will secure for the railway a sufficient supply of these notes to meet current expenses and salaries. There is a certain amount of opposition on the part of the Chinese authorities, but it is hoped to

overcome this in the near future with general satisfaction. The Chinese Government wired to Mr. Li Cha-kao, the Chinese delegate to Siberia, to the effect that as the Chinese Eastern Railway is entirely in Chinese territory it cannot be considered in the same light as the Siberian Railway. Should the Powers take the same measures to maintain the Chinese Eastern Railway as the Siberian Railway the delegate is instructed to make careful explanations on behalf of the Government, and take strong measures to protect the rights of China.

General Hsu Shu-tseng (Little Hsu) proposes the issue of a large domestic loan to cover the cost of the extension of the Peking-Suiyuan Railway to Urga. It is stated, says Reuter's Peking correspondent, that he is arranging that Japanese funds shall participate in the loan.

Akashi Electric Line Extension.—The proposed extension of the Akashi Electric line to Minatogawa has been rejected, in anticipation of its municipalisation at the time of the contemplated annexation of Suma to the city of Kobe.

New Lung-hai Railway Director.—The Ministry of Communications has appointed Mr. Li Ta-show as Director of the Lung-hai railway, in succession to Mr. Sze Chow-tseng, who is being sent on a mission to Europe. Mr. Li Ta-show has been General Administrator of the Peking-Hankow railway for some years.

Hankow-Szechuan Railway.—According to a Japanese report the Hankow-Szechuan Railway has signed a loan agreement for \$1,000,000 with a certain British syndicate. The loan is a short term one and the money has already been paid over. The terms of the loan are not stated.

Japan Utilises Shantung Railways.—A through traffic service for passengers and their baggage between Shantung and Japan over three different lines, namely, the Imperial Government Railways of Japan, the steamer lines between Sannoyima (Kobe) and of Moji to Tsingtau, and the Shantung Railways, has been arranged to begin on January 1. The available period of the through tickets is fixed at 30 days, including the day of issue, and the steamer connection for both passengers and baggage is to be made at Sannomiya, Moji and Tsingtau.

TRAMWAYS

Projected Tramway at Canton.—The Kwangtung Tramway Company, which holds the franchise for the building of a tramway at Canton, had its share subscription books open till December 31, 1919. The books were originally to have closed at the end of October. Mr. J. P. Hing, representative of the Company, is on his way to America to make arrangements for the purchase of the plant. The capital required is \$5,500,000, which appears to be slow in coming in, though it was announced that over \$2,000,000 had been subscribed in November by Canton and Hongkong Chinese capitalists.

Tramway Project for Wuchow.—Gen. Lu Yung-tung has been busy devoting his attention toward the industrial development of his province. His various industrial schemes include the encouragement of cotton growing, the development of Nanning as a commercial center, and the improvement of Wuchow port which is to be provided with wide maloots and the laying out of a tramway, as Canton.

Tokyo-Osaka Tramway.—The project of laying an electric railway between Tokyo and Osaka under the name of the Nippon Denki Tetsudo Kaisha is still being pushed. It is now reported that under the names of an increased number of promoters an application has been sent to Mr. Hara, the Premier of Japan, for permission to put the plan into effect. The anticipation of the plan affecting the revenues of the Government Railways has been the chief cause of year after year passing without official permission being granted, and the promoters have now evidently become impatient. It will be interesting to see what decision the Government comes to. It appears to be certain that permission will be granted, says the "Japan Chronicle," but whether there will be any hampering restrictions cannot be foretold.

Shanghai Tramways Returns.—The following is the Traffic Returns of the Shanghai Tramways (Foreign Settlement) for the weeks mentioned, with figures for the corresponding week in 1918:—

Week ended November 26, 1919.	
	1919
Gross Receipts	\$44,058.48
Loss by currency depreciation	11,183.47
Effective Receipts	\$32,875.01
Percentage of loss by currency depreciation	26.73
Car Miles run	90,945
Passengers Carried	1,989,990
	1918
Gross Receipts	\$41,683.62
Loss by currency depreciation	9,681.43
Effective Receipts	\$32,002.19
Percentage of loss by currency depreciation	24.34
Car Miles run	85,531
Passengers Carried	1,877,911
Week ended December 3, 1919.	
	1919
Gross Receipts	\$40,988.00
Loss by currency depreciation	10,283.70
Effective Receipts	\$30,704.30
Percentage of loss by currency depreciation	26.37
Car Miles run	89,328
Passengers Carried	1,857,929
	1918
Gross Receipts	\$35,754.85
Loss by currency depreciation	8,307.09
Effective Receipts	\$27,447.76
Percentage of loss by currency depreciation	24.44
Car Miles run	79,839
Passengers Carried	1,639,880
Week ended December 10, 1919.	
	1919
Gross Receipts	\$44,086.32
Loss by currency depreciation	11,150.13
Effective Receipts	\$32,936.19

Percentage of loss by currency depreciation	26.51
Car Miles run	90,560
Passengers Carried	1,990,910
	1918
Gross Receipts	\$32,337.51
Loss by currency depreciation	7,514.57
Effective Receipts	\$24,822.94
Percentage of loss by currency depreciation	24.59
Car Miles run	76,586
Passengers Carried	1,476,749
Week ended December 17, 1919.	
	1919
Gross Receipts	\$41,155.79
Loss by currency depreciation	10,322.18
Effective Receipts	\$30,833.61

Percentage of loss by currency depreciation	26.47
Car Miles run	89,020
Passengers Carried	1,853,299
	1918
Gross Receipts	\$32,787.38
Loss by currency depreciation	7,618.38
Effective Receipts	\$25,169.00
Percentage of loss by currency depreciation	24.60
Car Miles run	76,901
Passengers Carried	1,492,801
Week ended December 24, 1919.	
	1919
Gross Receipts	\$41,595.69
Loss by currency depreciation	10,490.62
Effective Receipts	\$31,105.07
Percentage of loss by currency depreciation	26.61
Car Miles run	88,732
Passengers Carried	1,858,886
	1918
Gross Receipts	\$31,841.93
Loss by currency depreciation	7,421.78
Effective Receipts	\$24,420.15
Percentage of loss by currency depreciation	24.72
Car Miles run	74,708
Passengers Carried	1,440,525

Percentage of loss by currency depreciation	26.61
Car Miles run	88,732
Passengers Carried	1,858,886
	1918
Gross Receipts	\$31,841.93
Loss by currency depreciation	7,421.78
Effective Receipts	\$24,420.15
Percentage of loss by currency depreciation	24.72
Car Miles run	74,708
Passengers Carried	1,440,525

MOTORS

Motors on the Amur.—The Chinese Hsutung Navigation Company, which operates on the Amur River, when it can, is endeavoring to arrange to run motor-cars on the frozen waterways in both Chinese and Russian territory until the ice breaks.

HIGHWAYS

Highways Urged for Kwangtung.—The "Canton Times" is urging the Kwangtung Provincial Assembly to start a Good Roads campaign, and begin by building a motor road from Canton to connect with the one built in the New Territory opposite Hongkong by the British.

Road Round Hongkong Island.—The new motor road round Hongkong island has been completed. It constitutes one of the most picturesque routes for its length in the world.

New Motor Roadway in South China.—The required fund for the proposed Maloo (horse road) from Kongmoon to Sunwei city, directed by some wealthy merchants of Hongkong, is \$240,000 which is divided into twelve shares, each of \$20,000, all of which has been raised. It is understood that the automobile road is divided into three sections; the first section is from Eastern Gate to Tze Lai Chung Hau of Kongmoon; second section, from Kongmoon to Pak Kai; and third, from Pak Kai to Kongchow of Sunwei district. The work of the first section will be commenced shortly. The width of the road is thirty-six Chinese feet, and both sides of the road will be bounded by iron and wire netting. The "Canton Times" says that the road will be used for the running of automobiles only. Eight automobiles each to convey twenty persons will run every 25 minutes. The fare will be divided into three classes; first class, 20 cents; second class, 10 cents and third class, 5 cents.

Motor Truck Transport Road.—The Canton-Samshui Railway plans to spend some \$200,000 to establish a motor truck transport road between Fatshan and Chanchuen, a distance of about ten miles. When the road is built motor cars and motor trucks for the conveyance of passengers and goods will be run regularly at fifteen minute schedules from either terminal.

Roads in Shensi.—The Civil Governor of Shensi Province is doing his best to build motor roads in the vicinity of Sianfu, and particularly between Tungkwan and Sian. He introduced one automobile sometime ago and, it is said, has purchased thirty more for general service.

Shansi Governor Making Roads.—The Governor of Shansi Province, who is noted for his progressiveness, is also improving the roads about Taiyuanfu and, it is said, has already ordered two American motor trucks as a try out.

WATERWORKS

Shanghai Waterworks.—According to Mr. A. P. Wood, of the Shanghai Waterworks, the supply of water in Shanghai dates back to 1881 and the undertaking was the first of its kind to be constructed in either China or Japan. In view of the universal adoption of water supply systems, it was astonishing to note how very few towns in China had followed suit.

The water is taken from the Whangpoo river at flood tide by gravitation and pumping, the latter being effected by steam and electrically operated pumps installed on the river banks. The water is discharged into six settling reservoirs having a total capacity of 42,000,000 gallons and in these the water remains until the sediment and heavy matter are precipitated. This accomplished, the water is pumped out through floating suction pipes so arranged that the top water is always drawn off, leaving the sediment at the bottom undisturbed. The water is next pumped to the service reservoirs which are raised some 10 or 12 feet so as to allow a steady flow of water by gravitation to the filter beds. Here, after passing through a layer of fine sand and other filtering material, the water again flows by gravitation to the clean water reservoirs which are entirely covered in so as to prevent any possibility of pollution from the atmosphere or other sources. From here the water is pumped into the mains and thence to the consumer. The average daily consumption of water in 1902 was 3,805,340 gallons, whereas during the past 10 months only of the year 1919 the average daily consumption had become 14,962,950 gallons. To meet the ever-increasing demand for water brought about by the rapid development of the Settlement and outlying districts, very big

extensions were now in hand, and when completed, would maintain a constant pressure during the daytime when the demand for water was naturally at its highest. The principal items provided for a new pumping-engine to be used as a standby in case of accident, a new 40-in. main from the pumping station to the Settlement, and the building of extensive reservoirs and pumping plant in the Western district.

Canton Waterworks.—Efforts are being made to enlarge the Canton Waterworks but constructing new storage and filtration reservoirs. At present there are only three storage reservoirs. A laboratory for the analysis of water is also recommended.

Kaifeng Project.—The authorities at Kaifeng, Honan, contemplate installing a waterworks. Rumors existed early in December that a loan had been made with Japanese interests for this purpose but that has been officially denied.

SHIPPING

M.B.K. American Line.—The shipping department of the Mitsui Bussan Kaisha has decided to carry out its plan of inaugurating a regular steamer service between Japan and America. The terminal ports will be Dairen and Seattle, the service to be maintained once a month. The steamer *Kenzan Maru* will be the first ship and will sail about the end of December.

Japan's Shipping.—At the end of October there were 710 ships of over 1,000 tons gross register, with 2,251,930 tons gross register, owned by Japanese companies. The N.Y.K. owns 95 of these steamers, with a total gross tonnage of 444,967 tons, and the O.S.K. 78 vessels of a total of 308,704 gross tons.

Shipping at Kobe.—The shipping returns of Kobe for November show a considerable increase in the arrivals of foreign ships, especially American steamers, which are now a close second to British vessels. The November arrivals consisted of 60 foreign ships, totalling 359,180 tons gross, and of 1,225 Japanese ships, with 1,279,570 tons. Compared with the corresponding month of last year, the foreign ships show an increase of no less than 42 in number and 286,351 tons in tonnage; the Japanese vessels show a decrease of 91 in number and an increase of 33,585 tons in tonnage.

Expatriation of Austro-German Prisoners.—The O.S.K. *Himalaya Maru*, the first ship to carry the Austro-German prisoners in Japan, was to sail from Kobe for Hamburg on December 26 with 1,000 men on board. It is said that the Osaka Shosen Kaisha will give them each an album of pictures showing places of interest in Japan. The second steamer is the *Kifuku Maru*, of the Kokusai Kisen Kaisha, which was to sail from Kobe on December 28, and the third the *Toyofuku Maru*, of the Kawasaki Kisen Kaisha, which was due to sail on December 30.

China Merchants Co. Buys Ships.—Orders for the purchase of five steamers have been placed by the China Merchants' Steam Navigation Company. One of these will be sea-going and has been ordered from a British ship works. Two of them have been contracted for with the New Dock, Pootung. They will ply between Shanghai and Hankow. The other two are being constructed by the Kiangnan Dock, and will navigate the Upper Yangtze between Hankow and Ichang. The company has at present 25 ships running between coastal ports and along the Yangtze.

New Shipbuilding Record in Japan.—The fitting out of the *Bangkok Maru*, 11,000 tons deadweight, built by the Uraga Dockyard, Japan, was completed on December 12, or in 14 days after she was launched. It is said that this is a new record in Japan.

Shipping Strike Averted.—The China Coast Officers' Guild and the Marine Engineers' Guild combined during December to ask the owners of the smaller river and coastal trade steamers on the China coast for an increase of forty per cent. in the salaries of masters, first officers, and chief engineers. The China Navigation Company, Indo-China S. N. Co., China Merchants S. N. Co., Hongkong, Canton and Macao Steamboat Co., and the Douglas S. S. Co., are not affected by the demand, as they have consistently paid a considerably higher rate of wages than obtains in the smaller vessels, and have enhanced the salaries by the addition of bonuses, the granting of leave, etc. The owners of the vessels outside the companies mentioned refused the demands as being excessive, the scale submitted by the Guilds being as follows:

Gross Tonnage	Master	Chief Officer	Second Officer	Third Officer
Up to 250...	\$400	\$275	\$230	\$220
251 to 500...	425	280	230	220
501 to 700...	450	285	235	225
751 to 1,000...	500	295	240	230
1,001 to 1,500...	550	310	245	235
1,501 to 2,000...	600	325	250	240
over 2,000...	650	350	260	250

An allowance for food and ice of \$40 per month for river steamers and \$50 per month for other steamers where food is not provided. An adequate entertainment and transportation allowance to masters where necessary. The refusal of the owners to whom the demands were addressed caused the Guilds to call a strike as from December 17. In reply the owners pointed out that if the Guilds carried out its threat they would ask the protection of the Court and ask for an injunction against the Guilds, as any strike would entail the breaking of contracts and therefore be illegal. After considerable discussion it was announced that all the smaller companies involved had agreed to the decision of the men to have the matter submitted to arbitration.

SHIPBUILDING

Construction in Japan.—Nine ships, totalling 48,800 tons gross, were launched during October in Japan, according to the returns of the Department of Communications which cover ships of over 1,000 tons gross. The ships of over 1,000 tons gross, each launched between January and October, 1919, number 102, totalling 452,394 tons gross, with a decrease of 38 in number and an increase of 57,364 tons compared with the vessels launched in the corresponding period of 1918.

Launching at Hongkong.—The Hongkong and Whampoa Dock Co., Ltd., launched on December 16 from their Kowloon Docks the steel single screw steamer *War Sceptre*, of the "B" class, two deck standard type, built to the order of the Shipping Controller, London. The *War Sceptre* is the fourth vessel of the class to be launched by the Dock Co. Her sister ships, *War Sniper*, *War Bomber*, and *War Trooper* have proved satisfactory on speed trials, and when tested for deadweight, the latter being 8,245 tons and the average speed 11 knots per hour. The dimensions are 400-ft. B.P. by 52-ft. MLD. by 31-ft. MLD. Tween decks 9-ft. high. The gross tonnage is 5,100 tons and net tonnage 3,300 tons. The *War Sceptre* was christened by Mrs. S. H. Dodwell.

Shanghai Standard Ship Departs.—The s.s. *War Diadem* built to the order of the British Shipping Controller by the Shanghai Dock and Engineering Co., Ltd., and launched from their Pootung Yard on October 11, has left for Rotterdam under the name of *Panagis*. She flies the Greek flag. The Company have the *War Tiara* and *War Regalia* under construction, and the first of these will be launched very soon.

INDUSTRIAL

Bubble Companies.—The Japanese Government is reported to be alarmed at the remarkable multiplication of bubble companies, which increase in number daily, and to fear serious effects from such speculative recklessness, says the "Japan Chronicle." The authorities welcome the development of any branch of industry or commerce based on a solid foundation, but they are of opinion that the present actual state of affairs is far from answering these requirements, and fear an economic crisis as the ultimate result unless such a reckless mania can be checked.

The Hanyehping Company.—A message to the Asiatic News Agency from Wuchang states that Mr. Tanaka, chief of the Commercial Department of the Japanese Foreign Office, who arrived there some time ago for the purpose of investigating the conditions of the Hanyehping iron and coal corporation and the iron mines at Tayeh, hopes to increase the output of iron and steel to meet the increasing uses of the Japanese Government and iron foundries in Japan, so that in the long run Japan may become independent of the United States and Great Britain for the supply of iron and steel in the development of her modern industries.

Match Combine in Japan.—Negotiations which have been going on between the Diamond Match Company of America and several Japanese concerns recently came to a standstill. The American representative is reported to be going to America to consult his principals, and the impression in Japan is that an agreement will soon be come to. The American proposition is that the Japanese concerns should first be bought up for Y.20,000,000, and then increase the capital to Y.30,000,000 with an investment of Y.5,000,000 on the part of both the Japanese and American interests.

New Spinning Venture in Shanghai.—It is now reported that Japanese business men have already bought a tract of land for a new factory to be built at Shanghai. Among the promoters is found the name of Mr. Yamamoto Jotaro, a leading Osaka business man.

A New Brewery.—An interesting piece of news is reported from Hiroshima, Japan. An American brewery expert, named, apparently, Mr. Hart, has been employed by a party of Japanese promoters, engaged in the establishment of a large brewery in Hiroshima with a capital of Y.5,000,000. The promoters include Mr. Miyake Seihei of Kure and other leading brewers in Hiroshima prefecture.

Wuhu Cotton Mill.—The Yu Chung Cotton Yarn Mill at Wuhu has opened up to give instruction to the coming operators. The mill will give work to many men, women and children.

Spinning Mill for Chihli.—The Chihli Provincial Assembly has approved the expenditure of a sum of \$1,000,000 deposited at the Chihli Provincial Bank over ten years ago as the proceeds of a provincial loan, for the erection of a spinning mill at Shihchiachuang instead of Tientsin.

Camphor in South China.—The gentry of Kwangtung and Fukien have wired to the Peking Government opposing the camphor monopoly as proposed by General Li Hao-chi, Military Governor of Fukien. The camphor industry is receiving great impetus especially in Kwangsi, which, under the patronage of General Lu Yung-ting, hopes to be able to export within a few years great quantities of the product. Just now, the General is reported as being much interested in the development of the camphor industry in Hohsien, where there are already planted more than 100,000 camphor trees. A company with a capital of \$400,000, divided into 40,000 shares of \$10 each, is said to be under organization. The new company will install a plant for the extraction and distillation of camphor. The same report has it that at present the capital of the new company has almost been fully subscribed, with \$200,000 from a rich merchant in the South Seas. The machinery for the camphor plant is being ordered from abroad, and an early commencement in the operation of the new industry is promised.

Cotton Mills at Tientsin.—A number of cotton mills are at present under construction in Tientsin. The Heng Yuen Cotton Weaving Co. is putting up a mill with 200 looms and 10,000 spindles, to manufacture sheetings, drills, and heavy canvas. The Yuan Textile Co. is erecting an extension for 21,000 spindles to its existing plant with 25,000 spindles. The Wahsing Cotton Spinning Mill began operations with 25,000 spindles at the close of 1918, and other mills are negotiating for the installation of 54,000 spindles. All these mills will use electric power from their own plants. Cotton experts are visiting the Kao Yang region and making valuable suggestions for the improvement of the cotton industry, while the College of Agriculture and Forestry of the University of Nanking has arranged for a number of cotton experimental stations in the Yangtze Valley for the cultivation of American cotton, as the local fibre is short and is inferior in strength.

Canton Paper Factory.—The Min Yuen Paper Factory established at Impo district, Canton, promises to produce white newspaper to supply the demand of local newspapers. At present the factory turns out about 3,000 catties of high class wrapping paper. It is the oldest paper factory in Canton, having been established about 30 years ago. It employs more than one hundred men, and with the completion of a new building to house new machinery recently ordered, it will employ more laborers. The principal is Mr. Lee Yan-chuen, a well-known Hongkong and Canton merchant.

Spinning Mill at Changchow.—A spinning mill is being erected at Changchow on the bank of the canal outside the South Gate. The prospectus of the company, which is capitalized at \$600,000 under the promotion of the local gentry, says that cotton has been produced at Changchow from time immemorial, the annual production reaching 200 piculs even in days when there were no spinning mills in China. The soil being admirably fit for the cultivation of cotton, the output is being increased from year to year. As Changchow produces cotton cloth and silk goods, the natives are not without knowledge of spinning, but so far having no spinning mill, they had to rely on old methods, purchasing yarn from Shanghai, Soochow and Wusi to the extent of 20,000 bales a year. The site embraces 43 mow of land which was bought from the Government at the price of \$3,000. The machinery is to be supplied from England. The structure will be built of reinforced concrete, whereas the motive power will be supplied by turbine motors bought from Messrs. Jardine, Matheson & Co. The mill expects to turn out 25,000 bales of yarn a year.

Oil Mill for Tientsin.—An oil mill equipped with first-class, modern machinery for manufacturing, filtering and refining all kinds of vegetable oils has been established in a substantial new brick building near the Chin-Chung bridge, Hopei, Tientsin. The mill is expected to turn out six to ten tons of oil daily. The mill has been founded by eight promoters, mostly returned students and men of the new school. They are: S. C. Liao, P. Anyang, T. Y. Chien, T. Hsu, C. L. Pan, M. F. Wang, H. C. Miao, and P. Y. Ching.

New Spinning Mill for Shanghai.—The Board of Directors of the Godo Spinning Co., Osaka, have decided that the present capital should be increased from Y.12,500,000 to Y.18,750,000. It was also decided that a sister company with a capital of Y.15,000,000 should be established at Shanghai, which fact accounts for the comparatively small increase of the capital of the old company. Arrangements will be made, says the "Japan Chronicle," for the transfer to the new company of a part of the tract of land the present company holds in China and also about 40,000 spindles at the lowest possible prices, with a view to speeding up the materialisation of the scheme under contemplation. The company proposes to pay a dividend of 50 per cent. for the second half of the present fiscal year.

Industrial Boom in Japan.—According to investigations made by the Japanese Department of Agriculture and Commerce, the number of new companies which came into existence during November aggregated 764, showing an increase of 286 as compared with the previous month. The paid-up capital for the new companies amounted to Y.53,294,000, which in spite of an increase in the number of companies shows a decrease of Y.5,016,000 as compared with October. According to investigations made by the Bank of Japan, the promotion and extension of companies in November stood in value at Y.384,610,000 and Y.169,605,000 respectively, aggregating Y.554,215,000. Calculated from the beginning of 1919 to the end of November, the figures amount to Y.2,269,217,000 in promotion and Y.1,144,327,000 in extension, aggregating Y.3,413,544,000, which shows an increase of Y.1,064,000,000 as compared with the corresponding month of last year. According to investigations made by the Mitsui Bank, the companies liquidated in the month numbered 67 for joint-stock companies, 62 for limited partnerships and 151 for joint stock limited partnerships, aggregating 280 firms. The capital involved stood at Y.21,120,050, of which Y.13,632,900 had been paid up. As compared with the previous month the figures under review show an increase of 29 in number and of Y.14,577,800 in the nominal capital and of Y.9,723,590 in the paid-up capital. The "Japan Chronicle" explains that a number of these liquidations must be formal liquidations for the increase of other companies.

Boycott Prompts Chinese Glass Factory.—Several Chinese in Shanghai have decided in view of the abundant stock of Japanese glass available in the market while national goods were conspicuous by their absence to promote a small glass factory with a capital of \$50,000, and to manufacture glass by manual labor instead of by machinery for the time being, \$20,000 was subscribed by those present at the meeting.

Sugar Dividend.—The Dai Nippon Sugar Manufacturing Company of Tokyo, which is among the foremost Japanese sugar concerns, is paying a dividend of 25 to 30 per cent. for the second half of the fiscal year. It may be mentioned that the company paid a 22 per cent. dividend for the previous term.

New Industries at Chinghwa.—At Chinghwa—our largest business centre in Honan Province, China—three new concerns are being floated, one a flour mill. This should be a paying concern, as they will be able to revive the large trade which at one time existed between Honan and Shansi in flour. Hundreds of mules come down from the hills every day, laden with coal or iron, and most of these return empty, so would be glad to carry flour back as they used to do when it was ground by water power.

Another is an electric light company. With an abundant coal supply, and even water power, this company should flourish. The demand from wealthy merchants for good light will not be lacking.

The third is a spinning company. There always has been a large trade in native cloth between this district and Shansi, so the market is ready waiting for a better supply. Cotton is grown locally, labor is abundant and cheap, says a correspondent of the "North-China Daily News."

Hunanese Oppose Sale of Cotton Mill.—The dispute between the Military Governor, Gen. Chang, and the Hunan native gentry, headed by ex-Premier Hsiung Shih-ling, over the control of the cotton factory at Changsha, is still unsettled. On the one hand, the natives strongly oppose the sale or transfer of this cotton factory to the Japanese for one and half million dollars while on the other, the natives are unable to pay this sum to the provincial government, even half in cash. Gen. Chang insists upon having ready cash for the payment of the arrears of his officers and soldiers who have not been paid for fully three months.

Japanese Paper Combine.—The Fuji Paper Manufacturing, the Tokyo Pasteboard Manufacturing and the Yokkaichi Paper Manufacturing Companies intend to form a combine. It is now reported that two other firms, the Kiso Kogyo and the Chuwo Seishi Kaisha are going to join this combine after first combining with each other. The object of this forthcoming "quintuple alliance," which will be capitalised at Y.50,000,000, is, it is reported, to compete with such leading rivals as the Oji Paper Manufacturing Company (of the Mitsui Bussan Kaisha) and the Mitsubishi Paper Manufacturing Company (of the Mitsubishi firm). Such being the case, it is expected that Japanese paper circles will be divided into three parties, the Fuji, the Mitsui and the Mitsubishi, holding out very interesting developments in future. It may be noted that there are some large pulp factories in Saghalien, and the Japanese paper mills are getting their supplies from these concerns to an increasing extent.

Ewo Increase Capital.—The capital of the Ewo Cotton Spinning and Weaving Company, Ltd., of Shanghai, was increased at the annual meeting on December 22, from Shanghai Tls. 750,000 to Tls. 1,000,000 by the issue of 5,000 ordinary unissued shares of Tls. 50 each at a premium of Tls. 145 per share, making altogether Tls. 195 per share. The new shares were offered to the holders of old shares in the ratio of one new share to holders of three old shares, those not taken up to be disposed of upon such terms as the Consulting Committee may think fit. This increase means the addition of Tls. 250,000 to ordinary share capital, making that account Tls. 1,000,000, while Tls. 725,000 will be placed to share premium account. At the present time the reserves amount to Tls. 1,200,000, so that it will be brought to Tls. 1,925,000. The last increase of capital was in 1909 when preference shares to the extent of Tls. 400,000 were issued. At that time land, buildings and machinery stood at Tls. 807,489.77 since which time the company had expended Tls. 1,444,545.59. The Company is putting up a new weaving shed with 88 looms.

Ewo has Prosperous Year.—At their annual meeting on December 4 the Ewo Cotton Spinning and Weaving Company, Ltd., of Shanghai, declared a dividend of Tls. 65 per ordinary share (Tls. 65 at rate of exchange on day of meeting equalled \$98.15 American currency, and £25 9s. 2d. sterling). Tls. 100,000 was set aside for depreciation on plant and machinery and Tls. 50,000 on buildings. Tls. 20,000 was set aside for repairs and renewals to plant. Tls. 100,000 was placed to cotton fluctuation fund, which fund now stands at Tls. 200,000. Tls. 60,000 was distributed as a bonus to staff at the mills.

Cotton Dividend.—The Kung Yih Cotton Spinning Co., Ltd., Shanghai, declared a dividend of Tls. 5 per share. The balance at credit of profit and loss was Tls. 706,463.

Company Dividends.—The following Japanese Companies have declared dividends: Dai Nippon Spinning Company, 60 per cent. per annum; Hinode Spinning Co., ordinary, 10 per cent.; special 25 per cent.; Toyo Paper Manufacturing Co., 40 per cent.; Harima Hydro-electric Co., 14 per cent.; Osaka Hosiery Weaving Co., 60 per cent.; Kwansai Shintaku (Trust) Kaisha, 10 per cent.; Tokyo Stock Exchange 29.2 per cent.; Nagoya Gas Co., 7 per cent.; Osaka Mousseline Weaving Co., 12 per cent., special dividend 23 per cent.; Godo Spinning Co., 50 per cent.; Fukushima Spinning Co., 80 per cent.; Osaka Bleaching Powder Manufacturing Co., 10 per cent.; Kinugawa Hydro-electric Co., 8 per cent.

Cotton-Growing Interest.—The Governor of Shansi Province is interesting himself in the growing of cotton and has already taken steps to encourage the erection of cotton mills in the Province.

COMMERCE

The Japanese Boycott.—The boycott of Japanese goods continues and agitations are taking place in various places in China. The Peking Government is endeavoring to prohibit the movement, and in this connection the Ministry of Education has sent out an order prohibiting students from publishing any pamphlets on diplomatic questions. Police and students came into serious conflict at Canton. In several places in the country bonfires were made of Japanese goods.

HARBORS, DOCKYARDS, ETC.

New Dockyard in Japan.—The Mitsui Bussan Kaisha's new dockyard at Hibiya-cho has been completed and covers a tract of land of some 358,000 *tsubo*. The yard is equipped with three docks (one a dry dock) and five slips, as well as many fine buildings, including a hospital, official residences, for employees, a seaman's training school, supplementary schools, etc. It is stated that the maximum capacity of the docks is for a ship 450 feet long.

Improvements for Nagasaki Harbor.—The Japanese Home Department has decided to include Y.7,000,000 in the budget for the next financial year to improve the harbors of Nagasaki and Nagoya. A proposal to undertake harbor improvement works at Nagoya has also been receiving attention from the Home Department, which has now made a favorable decision. Work will commence on these improvements at the beginning of next fiscal year.

Macao Improvements.—The reclamation of the Chinchow shores near Macao, South China, is approaching completion. Barracks and fortifications which are in course of construction in that part of the colony will be completed by next year, when the authorities propose to open the place as a new port.

AVIATION

Korea to Japan.—The Japanese military authorities are making arrangements for a non-stop flight between Hiroshima and Seoul, a distance of 720 kilometers. Some seven or eight aeroplanes will participate in the aerial journey, all to be first transported to Seoul, from whence flights will be made to different points of Korea. Finally the main flight will be made from Seoul to Hiroshima, across the Korean Channel and over the Sanyo railway. The journey is expected to take five or six hours.

Aeroplane Industry in Japan.—It is reported that the Mitsubishi Company has purchased the interests of the Japan Aeroplane Works at Ota-cho, Gumma prefecture, which has been under the management of Mr. Kawanishi, of Kobe, and other capitalists. Mr. Kawanishi and other business men are said to be contemplating building another aeroplane works at Oi, a town near Tokyo.

Air Service.—In connection with the suggested air service from England to Australia it is proposed to have stages between Cairo and Calcutta, Calcutta and Singapore, and Singapore and Port Darwin.

The Aerial Derby.—Commodore Beaumont and Major Glidden, Governors of the Aero Club of America and Vice-Presidents of the Aerial League of America, and also Mr. Benjamin Hillmann, all of whom belong to the Federation Aeronautique Internationale, and who have been commissioned to organize the first Aerial Derby round the world are at present in the Far East in connection with their work.

Aeroplanes as Pirate Hunters.—Captain Arthur F. Lym, commander of the Canton Aviation Corps, and an American educated man, advocates that aeroplanes be employed to patrol commercial routes and suppress piracy and brigandage. He recommends that aviation headquarters be established at Canton, Shuihing and Wuchow, on the West River, at Pakhongchow, on the North River, and Kongmoon and Waichow. In Captain Lym's opinion each station should maintain three aeroplanes of the scouting type capable of carrying two men, and be equipped with wireless, etc. He urges the Canton Government to buy aeroplanes and use them.

ELECTRICAL ENTERPRISES

Kobe Electric Charges.—The Electric Bureau of the Kobe Municipality now declares that an approximate deficiency of Y.1,500,000 is unavoidable in the next year's budget unless there is some increase in its income. To effect this increase the Bureau has under contemplation an increase in the lighting charges by 20 per cent., by which some Y.600,000 per annum would be obtainable.

Hongkong Company Profits.—The China Light and Power Company (Hongkong) for the fourteen months ended September 30 earned a gross profit of Hongkong \$186,059.75. A dividend of eight per cent. was declared.

Shanghai's Telephone and Electrical Services.—At the opening meeting of the 1919-1920 session of the Engineering Society of China at the end of November, Mr. A. P. Wood, the President, said that in the near future there would be 13,000 lines and 9,000 telephones working in Shanghai. Well over 100,000 telephonic conversations took place in Shanghai daily, of which ten per cent. were connected within one hour in the forenoon. Speaking of the Shanghai Municipality Electricity Department he said that with the completion of the extensions at the Riverside station the Department would be in a position to handle a load of 77,660 kilowatts or say 100,000 horse power. The estimated load for the coming year was 34,000 kilowatts and an output of 130,000 units was anticipated. The turbo-generators now being installed were of 20,000 kilowatts capacity each, and individual transformers of similar capacity were included in the layout.

Kongmoon Light Co Expanding.—The Electric Light Supply Company of Kongmoon, South China, has increased its capital by \$200,000 for the purpose of purchasing more machinery and installing more electric wires. The whole additional capital has been raised and a petition has been sent to the Canton authorities for registration.

New Japanese Power Company.—Among the new companies formed in Japan in November was the Dai Nippon Denryoku Kaisha for developing electrical power. The capital is Yen 50,000,000.

Electric Railway Company Profits.—The Nagoya Electric Railway Company is reported to have amassed a profit of Y.1,408,000 during the second half of the present fiscal year, showing an increase of about Y.20,000 as compared with the previous period. Out of this revenue Y.750,000 will be allotted to the payment of a call on shares, after which it is anticipated that the company will pay a dividend of 11 per cent.—the same as for the previous term—for the second half of the current fiscal year.

Company to Operate in China.—The Kawakita Electric Enterprise Company, which is one of the first-class companies in Japan, so far as the electric industry is concerned, is now planning for the establishment of a sort of a sister company in China with the support of leading business men. The company will explore the southern part of China, with permission of the Chinese authorities, of course. It is named the Toyo Denki Kabushiki Kaisha and has a capital of Y.5,000,000 allotted. It is expected that if things go without any hitch the company will be established in the course of the present year.

More Wireless for China.—It is reported that among seven valuable patents which the Japanese have purchased from Germany is the "Telefunken" patent, and that the Japanese are endeavoring to arrange for the erection of a powerful Telefunken station in China by March next.

A Pakhoi Plant.—Some years ago Dr. Neville Bradley of the Church Missionary Society, when resident installed a small electric light plant in the hospital compound. Later on a more powerful plant was purchased, and set up in the town itself. Dr. Bradley, on his transfer to Yunnan, decided to sell the plant, and the transaction has now taken place, two-thirds of the purchase price having been paid. The new company evidently anticipated large profits for they have already increased their working expenses by some 150 per cent. Whether the supply of light will improve correspondingly is a question, says the Pakhoi correspondent of the "North-China Daily News."

Hanshin Electric Tram Co.—The Hanshin Electric Tramway Co. has decided to increase the capital from Y.10,500,000 to Y.25,000,000, for which purpose 290,000 new shares will be issued.

Electrical Power for Tin Mining in Malaya.—With the object of arousing greater interest in the problem of the application of electrical power to tin mining Messrs. D. M. Hutchinson and W. J. Wayte submitted a joint paper before the institution of Electrical Engineers on "Electricity in tin mining in the Malay States." The paper pointed out that European-owned mines employed a maximum of machinery and a minimum of labor, while Chinese-owned mines employed a maximum of labor and a minimum of machinery. The mines under Chinese management in 1918 produced about 70 per cent. of the total output and as there were under half-a-dozen electrically-driven Chinese mining plants, there should be a great scope for the electrical engineer in the immediate future.

Record Wireless Station at Saigon.—What is probably the most powerful wireless telegraph station in the world will soon be in operation at Saigon, Indo-China. It will be able to communicate successfully with France, Africa, Madagascar Island, French New Caledonia, Australia, Japan and the United States. The continuous wave system will be used. Electrical power will be supplied by two convertor groups equipped with internal combustion motors of 2,500 horsepower. Aerials will be suspended from a height of 833 feet and the net work of wires will spread over nearly 180 acres. The new station is expected to be a great aid to the Pacific north-west in carrying on business across the Pacific, in view of present communication difficulties.

MINING

Lungyen Iron Exempted from Taxation.—The Peking Government has decided to exempt the iron and steel products of the Lungyen Iron Mines (on the Peking-Suiyuan railway) from duties and taxes within a radius of 50 miles of the Maritime and native Customs. Iron ore, however, is to be taxed.

Iron in Kwangtung.—Large iron deposits are reported to have been discovered in Ma Chingyun district. The Director of the Canton Government's Smokeless Powder Factory, who is interested on behalf of the government in the new discovery has despatched to that place a number of mining engineers to report on the real value of the find.

Tungsten from China.—It is believed that the growth of China as a predominant figure in the tungsten market of the world is based on sound economic laws of abundant and cheap supply, says a report of the Bureau of Commerce at Washington, and that it should be to the greatest advantage of American manufacturers whose products are affected by the price of high-speed steel to continue to draw from the Chinese market. This will not only give their products a lower price in world competition, but will encourage export trade with China by furnishing return cargo.

Lungyen Iron Mines.—It is reported that General Ting Shih-yuan, Managing Director of the Peking-Suiyuan and Peking-Hankow Railways, has been appointed Co-Director of the Lungyen iron mines, near Kalgan, in Chihli Province. The same report says that half the capital of \$10,000,000 has been subscribed by Japanese capitalists and Japanese mining engineers are in charge of mining operations.

Coal in Korea.—The coalfield in question extends over a vast tract of land in Kaichon, Sunchon, Tokchon, and Mainsan Districts in South Pyongando, and Samchok District in Kangwando. The working of the field has so far been reserved to the Pyongyang Mining Station. Owing to the rise of the fuel question in Korea, however, it has now been found advisable to try to obtain cancellation of the reservation and the mining men have openly started a movement to induce the authorities to permit public operation of the field. It seems an extraordinary procedure, if the deposit really is a rich one, as alleged, for the Government to keep it "up its sleeve," says the "Japan Chronicle."

Iron and Coal in Japan.—The October yield of iron in Japan reached 7,291 metric tons, which is an increase of 6.5 per cent. as compared with the corresponding period of 1918. Coal increased 9 per cent. over the record for October, 1918, the total yield of the month being up to 2,242,047 metric tons.

Shuikoushan Tin and Antimony Mines.—A report from Changsha says that "the famous Shuikoushan tin and antimony mines are working quite smoothly. Some mining experts are expected there from Japan to act in various capacities in this valuable mine in accordance with the agreement signed by the former Military Governor Gen. Tan Yen-kai with the Japanese Mitsui Company of Shanghai for a loan of five million dollars out of which only one million dollars were paid over to the Chinese. The natives of Hunan strongly oppose Japanese control, but only future events can show whether the smart Japanese will actually take charge of this mine or merely work behind the scene. The Chinese authorities say that the German loan of two million dollars for this mine has been confiscated by the Peking government as a result of the war."

Kailan Mining Output.—The total output of the Kailan Mining Administration for the period beginning November 16 and ended December 13 was 370,606 tons, while the sales during the same period totalled 358,937 tons.

CONSTRUCTION

Shanghai Race Club Building.—Qualified architects are invited by the Shanghai Race Club to submit designs for grand stand and club house, public stand and pari rooms, refreshment rooms and conveniences for the public, on a site in the Race Club enclosure. Particulars and conditions of the competition may be obtained from Mr. A. W. Olsen, secretary of the club.

Rebuilding Osaka.—The Osaka Municipality has just drawn up a gigantic plan of rebuilding the city so as to meet the modern requirements in all respects, says the "Japan Chronicle." As the plan is on a gigantic scale the work is divided into many stages, each of which will cover ten years. The sum of Y.100,000,000 is estimated as the expenditure requisite for the first stage of the work. Mr. Ikegami, the Mayor, Dr. Seki, the Assistant Mayor, are interested. The city of Osaka, rebuilt on the new plan, will cover 85 square miles, extending to Takarazuka in the north, to the foot of Ikomayama in the east, and to the Minami Yamatogawa in the south. Roads are classified into five, the first-class road having a width of 24 ken (one ken being six feet), second-class 16 ken, and third-class 13 ken. The fifth-class, or the narrowest road, will be eight ken in width.

Parliament Buildings, Peking.—It is reported that the present Chinese Premier has decided to resume construction of the Parliament House buildings at Peking which were under way when the Revolution of 1911 took place. Construction work was stopped when the Manchus were overthrown.

Buildings at Canton.—Work on the new building for H.B.M. Consulate in Shameen, Canton, has been started. When completed the building will be an imposing addition to the concession's modern buildings. The work on the Banque Industrielle de China new and permanent quarters in the French concession Shameen, is also in rapid course of completion.

CONSERVANCY

Grand Canal Work.—Mr. John R. Freeman, Consulting Engineer of the American International Corporation, is on an inspection trip of the Yellow River in company with Mr. Yang Pao-ling and Mr. van der Veen, members of the Chihli River Commission. The main object of the journey is to study the problem in connection with the crossing of the Grand Canal over the Yellow River.

Canton Harbor Works.—The members of the Canton Provincial Assembly have addressed a letter to the Civil Governor of Kwangtung Province requesting him to call the attention of the directors of the River Conservancy Board to the approach of the flood season, and beg that body to take the necessary steps to prevent in time the loss of many lives and of property and crops. The Civil Governor immediately referred the communication to the directors of the Conservancy Board, with the recommendation that prompt action be taken. It is said that the Board would be willing enough to start actual operation, if sufficient funds are provided.

New Water Way.—A band of Chinese surveyors are busy taking levels and measurements of the country in the vicinity of the Tsin River, Honan Province, with a view to connecting this river with the Wei River at Taokow, and thence on to Tientsin. If they are successful this may be the means of delivering Hsiuhsien and Wuchihhsien from the floods which are so frequent, and which do so much damage to the Taoching Railway, but on the other hand, unless the projected canal is kept well dredged, it will prove an additional danger to Sinsiangsien and Chisien which suffer more or less from flood every year.—"North-China Daily News" correspondent.

The Kaifeng Canal.—Work is being carried on in connection with canal extension from the south-east (Kueiteh) to Kaifeng. Work has started on this end likewise, and is being conducted by gangs of countrymen who have been pressed into service, and whose term of labor is generally for one month. These unfortunates receive neither food nor money for their work.

FINANCIAL

Canton Mint.—Director Kun Ching, of the Government Mint, Canton, has ordered the collection of all old Kwangtung ten and twenty-cent pieces for the purpose of recoinage. The mint has been turning out 750,000 pieces of twenty and ten-cent coins daily, and working day and night. The "Canton Times" claims that this mint is unique for the fact that it has turned out more individual coins than any other mint in the world, most of the coins being one-cent copper pieces.

Chinese Hoard Silver.—Silver is being withdrawn from circulation and hoarded, says the Nanning correspondent of the "North-China Daily News." Almost everyone has his pile, from the official down to the coolie—waiting for the rainy day. This mineral wealth is of no use to anybody at present, and its withdrawal from circulation is another factor in making the price of that metal rise. The White Miao in the northwest of the Province and on the borders of Kueichow, who grow the opium and sell it, will take payment only in silver. But this silver is of no use to them or anybody else. They wax rich, but they buy nothing. They still live as their forefathers did, and the precious metal is buried and untouched.

What is here said of Kwangsi is true of every province in China.

Japan's Revenue.—The total revenue of Japan to the end of November was Y.955,093,082.616, according to a report published by the Finance Department of Japan, which is an increase of Y.181,888,464.765 over the corresponding period of 1918.

New Stock Exchange in Dairen.—A message from Dairen, Manchuria, reports the activities of a party of enterprising business men, including some Osaka people, in establishing an exchange to deal with stocks, shares and natural products in Dairen. The capital is fixed at Y.10,000,000, which is divided into 200,000 shares.

Japanese Budget.—The Budget for 1920-1921 was informally shown to members of the Diet on December 20. Revenue, ordinary, is estimated at Yen 1,043,208,700 and revenue extraordinary at Yen 232,740,323; Expenditure, ordinary Yen 752,177,906, expenditure, extraordinary, Yen 523,766,117 showing increase over the preceding year in revenue, ordinary, of Yen 204,032,757; in revenue extraordinary, of Yen 7,690,926; in expenditure ordinary of Yen 246,279,514 and in expenditure extraordinary of Yen 137,474,169. The revenue increases are principally due to increases in the income and liquor taxes. The expenditure increase are due to appropriations for the army, navy, and communications departments. The army took Yen 241,726,863 as compared with Yen 144,735,560 in the preceding year, the Navy Yen 377,770,376 as compared with Yen 249,548,192; and communications Yen 218,310,915 as compared with Yen 139,821,706. The Minister of Finance in an explanatory speech said that in compiling the budget special consideration had been given to the consummation of national defence, improvement of means of communication and encouragement of education and industries.

Vickers' Loan Protest.—A formal protest has been lodged by the American Legation at Peking with the Chinese Minister for Foreign Affairs against the Vickers Aeroplane Loan Agreement.

Sino-Italian Bank.—A Japanese newspaper printed in the Chinese language states that the contract for the Sino-Italian Bank calls for \$4,000,000 of Chinese capital and Lire 20,000,000 of Italian. The bank is to operate under the agreement for 30 years, with the right of shareholders to extend the period. The new concern will handle ordinary banking business. The Governor is to be Chinese and Chinese are to occupy two posts as directors and one supervisor, the Italians to have similar officers, as well as three advisers.

Revenue to Chinese Government.—The sum of Tls. 3,400,000 was due for release from the surplus revenue of the Chinese Maritime Customs to the Chinese Government on December 25. The Diplomatic Body at Peking stipulated that Tls. 465,000 should be delivered to the Southern Government at Canton, and Tls. 400,000 should be utilized to defray the expenditure of the Chinese Legations in foreign countries.

China's Budget.—The Eighth Year Budget of the Republic of China includes:

Permanent Annual Income	...	\$409,838,001
Temporary Annual Income	...	80,581,785
Total Annual Income	...	\$490,419,786
Current Annual Expenditures	...	\$271,289,295
Temporary Annual Expenditures	...	224,473,681
Total Annual Expenditures	...	\$495,762,976

Of the revenues those from the Salt Gabelle stand first with \$108,815,000, the income from customs being second with \$93,268,907, and the proceeds of the land tax, China's greatest potential asset, coming third with \$86,345,388.

Over two-fifths of the estimated expenses for the Eighth Year of the Republic (1919) are for the army, the outlay for which is fixed at approximately \$198,000,000. As against this estimate for military upkeep the budget provides that \$6,500,000 shall be spent for education, about \$6,000,000 for the Ministry of Foreign Affairs, \$10,350,000 for the Ministry of Justice, and \$3,400,000 for industrial developments under the Ministry of Agriculture and Commerce.

Another China Loan.—A Peking report states that the Quadruple Banking Syndicate are negotiating to lend China £5,000,000, and that it is probable that the loan will be arranged and money made available at latest early in January.

Move for Currency Reform.—The British Minister at Peking has, in pursuance of the resolution of the British Chamber of Commerce Conference, addressed a Note to the Peking Government urging the introduction of a uniform dollar currency, the abolition of sycee, and the establishment of a mint for the free coinage of dollars at Shanghai. The Chinese Government is said to be ready to establish a mint at Shanghai and will announce its decision early in January.

MISCELLANEOUS

Siberia's New Cabinet.—The constitution of the new Siberian Cabinet is as follows:—Premier and Minister of the Interior, M. Pepelaieff; Vice-Premier and Minister for Foreign Affairs, M. Treteakoff; Finance, M. Burishkin; Commerce, M. Okobokoff; Agriculture, M. Petroff; Labor, M. Shumilovsky; Communications, M. Ustrikoff; War, M. Khangin; Public Instruction, M. Preobragensky; Justice, *ad interim*, M. Morozoff; State Controller, M. Erasnoff; Superintendent of Government Affairs, M. Gins. The actual direction of the Ministry of the Interior is entrusted to M. Cherven-Vodaly, Acting Minister. The Ministries of the Navy and Supplies are to be reduced to the status of departments.

Pasture Project in Mongolia.—Baron Okura is undertaking with General Chang, the Chinese Military Governor at Mukden, a pasture project in Mongolia. The pasture covers an area of 40,000 *cho* (about 12 miles square), in which the sum of Y.4,000,000 will be invested.

Chinese Labor.—A Washington despatch announces that the Labor Conference has fixed the hours for China as follow: Adult labor: 10 hours per diem, with a maximum of 60 hours per week. Those under 15 years of age will have an eight-hour day and a 48-hour week. A holiday will be granted every seven days. The Factory Law will be applicable to all establishments employing more than 100 hands. The law will be enforced in factories in foreign concessions or leased territory and will come into force immediately. The message states that China's representative protested against the decision but was over-ruled when the question was put to the vote.

Returned Laborers to form Organization.—Chinese laborers returned from war service in Europe will form a society in Shanghai for promoting labor interests in China, according to an announcement by the President of the Belgian Chinese Labor Union, Mr. Shah Chi-fung. When the workmen were in France and Belgium, two unions were organized respectively in Rouen and Poperingh, to which all the 145,000 Chinese laborers in Europe belonged. These unions undertook to care for the educational development of the Chinese. As most of the laborers have now returned to China, the executive officers of the two unions feel that an organization in China is necessary.

Camphor in Formosa.—The Government General of Formosa has made a careful investigation into the matter of increasing the production of camphor and its endeavors have been quite successful. It was recently announced to the celluloid manufacturers that the camphor supply would increase by about 4,000,000 pounds, beginning the next fiscal year, and celluloid manufacturers will not find themselves handicapped again by a camphor shortage.

China's Customs Record for 1919.—The Chinese Maritime Customs revenue for 1919 amounted to Haikuan Tls. 46,000,000, equivalent to over £14,500,000, the highest collection on record, surpassing that of 1913 to which opium largely contributed by Tls. 2,030,000 or nearly £800,000 if calculated in gold. The revenue also shows an increase of Tls. 9,655,000 as compared with 1918. The revenues collected at the principal ports were approximately as follows:—Antung, Tls. 1,345,200; Dairen, Tls. 4,556,900; Tientsin and Chinwangtao, Tls. 5,565,800; Kiaochow, Tls. 1,666,700; Hankow, Tls. 4,219,500; Shanghai, Tls. 14,289,700, an increase of Tls. 3,386,600; and Canton, Tls. 2,471,900. The revenue of the Native Customs under the Inspector General's control amounted in round numbers to Tls. 4,491,000, also a record and an increase of Tls. 517,000 as compared with 1918. After meeting all the foreign loans indemnity obligations secured on the Native Customs, including the Reorganization Loan for 1918, and also providing for the cost of collection and sundry fixed appropriations for river conservancy, harbor works, etc., it has been possible to hand over to the Government during the year Tls. 22,604,123. Out of the amount released the Government appropriated and handed to the Inspector General Tls. 4,795,000 for the service of domestic loans. The foreign loan indemnity service dependent on the Customs revenue requires an annual disbursement of £7,000,000. At the present rate of exchange the revenues controlled by the Inspector General produce about £20,000,000 annually. It will thus be seen that if silver maintains its price there will be a considerable margin of unpledged revenue at the disposal of the Government.